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U. S. DEPARTMENT OF AGRICULTURE.  
DIVISION OF ENTOMOLOGY.

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BIBLIOGRAPHY  
OF  
THE MORE IMPORTANT CONTRIBUTIONS  
TO  
AMERICAN ECONOMIC ENTOMOLOGY.

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PREPARED BY AUTHORITY OF THE SECRETARY OF AGRICULTURE,

BY

SAMUEL HENSHAW.

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PART IV.  
THE MORE IMPORTANT WRITINGS  
OF  
GOVERNMENT AND STATE ENTOMOLOGISTS,  
AND OF  
OTHER CONTRIBUTORS TO THE LITERATURE OF AMERICAN  
ECONOMIC ENTOMOLOGY.

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WASHINGTON:  
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1895.

FORTY-SEVENTH CONGRESS, FIRST SESSION.

CONGRESS OF THE UNITED STATES,  
IN THE HOUSE OF REPRESENTATIVES,

*June 24, 1882.*

*Resolved*, By the House of Representatives (the Senate concurring), that there be printed, for the use of the Department of Agriculture, one thousand copies of a special report entitled "Bibliography of Economic Entomology."

Attest:

EDW. MCPHERSON, *Clerk*.

Passed the Senate July 6, 1882.

F. E. SHOBER, *Acting Secretary*.

A true copy.

EDW. MCPHERSON, *Clerk*.

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301. COOK, A. J. Economic entomology. Its history, progress, and needs in the United States. <4th Annual Rept. Pomol. Soc. Mich. for 1874, 1875, pp. 176-183. See also: <*Loc. cit.*, pp. 546-547.  
Notice of the work of Harris, Fitch, Walsh, Riley, Le Baron, Packard, Glover, and of several societies and colleges; subjects which need investigation.
302. COOK, A. J. Grape Phylloxera. <4th Annual Rept. Pomol. Soc. Mich. for 1874, 1875, pp. 341-350, f. 1-5. See also: <*Loc. cit.*, p. 556.  
History, habits, and means against *Phylloxera vastatrix*.
303. COOK, A. J. Insects injurious to the farm, garden, and orchard. <13th Annual Rept. Secr. State Board Agriculture Mich. for 1874, 1875, pp. 106-152, figs. 1-47. Separate: 1875, 48 pp., figs. 1-47.  
The following species are considered, many of them are figured: *Doryphora 10-lineata*, *Agrotis subgothica*, *A. cochrani* [= *messoria*], *Lachnosterna fusca*, *Cecidomyia* [= *Diplosis*] *tritici*, *Elaterid* sp., *Bruchus pisi*, *Coreus* [= *Anasa*] *tristis*, *Melittia cucubita* [= *ceto*], *Macrosila quinquemaculata* [= *Protoparce*

## 303. COOK, A. J.—Continued.

*celcus*], *Agrotis devastator* [= *Hadena devastatrix*], *Plutella cruciferarum*, *Halicta striolata* [= *Phyllotreta vittata*], *Anthomyia brassicæ*, *Pieris rapæ*, *Anthomyia raphani*, *Lytta cinerea* [= *Macrobasis unicolor*], *L. atrata* [= *Epicauta pennsylvanica*], *Diabrotica vittata*, *Carpocapsa pomonella*, *Saperda candida*, *Chrysobothris femorata*, *Mytilaspis conchiformis* [= *pomorum*], *Bostrichus* [= *Amphicerus*] *bicaudatus*, *Elaphidion parallelum* [= *villosum*], *Anisopteryx* [= *Paleacrita*] *vernata*, *Clisiocampa americana*, *Hyphantria textor* [= *cunea*], *Aphid* sp., *Conotrachelus nenuphar*, *Sigalphus curculionis*, *Ægeria* [= *Sannina*] *exitiosa*, *Selandria* [= *Eriocampa*] *cerasi*, *Tomicus* [= *Phloeotribus*] *liminaris*, *Aphis mali*, *A.* [= *Myzus*] *cerasi*, *Ægeria tipuliformis*, *Nematus ventricosus* [= *ribesii*], *Abraxis* [= *Enfitchia*] *ribearia*, *Macroductylus sub-spinosus*, *Erythroneura* [= *Typhlocyba*] *vitis*, *Phylloxera vastatrix*, and *Tinea flavifrontella*.

## 304. COOK, A. J. Clothes moth. &lt;Cultivator and Country Gentl., 29 June, 1876, v. 41, p. 407.

Means against Tineidæ.

## 305. COOK, A. J. A new insect enemy. &lt;Cultivator and Country Gentl., 24 August, 1876, v. 41, p. 535.

From the Michigan Farmer; characters, habits, ravages, and means against *Phytocoris lineolaris* [= *Lygus pratensis*].

## 306. COOK, A. J. Fruit or insects—which? &lt;14th Annual Rept. Secr. State Board Agriculture Mich. for 1875, 1876, pp. 91–96.

Brief directions as to the means against some of the worst pests of the apple, peach, cherry, and pear orchards and of small fruits.

## 307. COOK, A. J. The three insect enemies most to be dreaded by the farmer. Delivered at Decatur, Adrian, and Coldwater. &lt;14th Annual Rept. Secr. State Board Agriculture Mich. for 1875, 1876, pp. 276–282, figs. 1–5.

Life history of the army worm, *Leucania unipuncta*; note on the insect habits of birds, especially the robin and blackbird.

N. B.—The remarks on the cutworms and May beetles are not printed in this report.

## 308. COOK, A. J. The cabbage worm. &lt;Cultivator and Country Gentl., 18 October, 1877, v. 42, p. 667.

Characters of *Pieris rapæ*; its natural history, remedies, and enemies.

309. COOK, A. J. *Phylloxera vastatrix*. <Cultivator and Country Gentl., 1 November, 1877, v. 42, p. 699.

Characters, forms, ravages, and remedies of *Phylloxera vastatrix*.

## 310. COOK, A. J. The Hessian fly. &lt;N. t. p. 1878, 8 vo., 14 pp., figs. 1–6.

Natural history and ravages of *Cecidomyia destructor*; remedies and parasites.

## 311. COOK, A. J. The pine-tree borer. &lt;Cultivator and Country Gentl., 4 July, 1878, v. 43, p. 423.

Habits and ravages of *Monohammus scutellatus*, and *M. confusor*.

## 312. COOK, A. J. The oak-tree beetle. &lt;Cultivator and Country Gentl., 25 July, 1878, v. 43, p. 471.

Character, habits, and food plants of *Elaphidion putator* [= *villosum*].

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Description and natural history of *Lecanium tulipiferae*; remedies.
314. COOK, A. J. Pease and the pea grub. <Cultivator and Country Gentl., 1 May, 1879, v. 44, p. 279.  
Notes on the vitality of *Bruchus*-eaten pease.
315. COOK, A. J. The *Lecanium* of the tulip tree. <Amer. Nat., May, 1879, v. 13, p. 324-326, figs. 1-6.  
Description and figures of *L. tulipiferae*; remedies.
316. COOK, A. J. Strawberry insect. <Lansing Republican, 24 June, 1880.  
Notes on *Paria aterrima* [= *Typophorus canellus*] as a strawberry pest.
317. COOK, A. J. Codling moth. <N. Y. Tribune. Abstract: <Amer. Ent., September, 1880, v. 3, (n. s.) v. 1, pp. 222-223.  
Means against *Carpocapsa pomonella*.
318. COOK, A. J. New methods of fighting certain injurious insects. <Amer. Ent., November, 1880, v. 3, (n. s.) v. 1, pp. 263-264.  
Arsenites against *Carpocapsa pomonella*, and bisulphide of carbon against larvæ of *Anthomyia brassicae* and various borers.
319. COOK, A. J. Two insect pests new to Michigan and hints regarding the destruction of noxious insects. <19th Annual Rept. Secr. State Board Agriculture Mich. for 1880, 1880, pp. 273-278.  
*Paria aterrima* [= *Typophorus canellus*]; its characters, habits, and remedies. *Depressaria heracliana*, characters, life history, and means against ravages. London purple for the codling moth; pyrethrum as an insecticide.
320. COOK, A. J. Carbolic acid as a preventive of insect ravages. <Can. Ent., September, 1881, v. 13, pp. 189-191. <Ann. Rept. Ent. Soc. Ontario for 1881, 1882, pp. 26, 27.  
A mixture of carbolic acid, soft soap, and water as a means against insects.
321. COOK, A. J. Experiments with insecticides. <1st Biennial Rept., Secr. State Board Agriculture Mich., 1882, pp. 246-248.  
Details of experiments made to test the necessary quantity of an arsenite as a means against insects.
322. COOK, A. J. Insecticides. <22d Annual Rept. Secr. State Board Agriculture Mich. for 1882-83, 1884, pp. 243-245.  
Details of experiments with pyrethrum and kerosene.
323. COOK, A. J. Bull. No. 3, Entomology. The black wheat-stalk *Isosoma*. <23d Annual Rept. Secr. State Board Agriculture Mich. for 1883-84, 1884, pp. 322-326, figs. 1-4.  
Characters and habits of *Isosoma nigrum* sp. nov.; figures the same.
324. COOK, A. J. Practical entomology. Notes from the entomological laboratory of the Michigan Agricultural College. <14th Annual Rept. Secr. State Hort. Soc. Mich. for 1884, 1885, pp. 81-109. <Separate: 32 pp.  
CONTENTS: Black army worm, *Agrotis fennica*; Strawberry crown girdler, *Otiorynchus ligneus* [= *ovatus*], by C. M. WEED; Bark-lice, Coccidæ; Plant-

## 324. COOK, A. J.—Continued.

lice, Aphididæ, Currant borer, *Ægeria tipuliformis*; A common butterfly enemy, *Pyrameis cardui*; Strawberry leaf-roller, *Phoxopteris complana* [= *fragariæ*]; Food relations of birds, frogs, and toads, by C. M. WEED; Cherry slug, *Selandria* [= *Eriocampa*] *cerasi*, by C. M. WEED.

## 324a. COOK, A. J. The apple maggot. &lt;14th Annual Rept. Secr. State Hortie. Soc. Mich. for 1884, 1885, pp. 201–203, figs. 1–3.

History, natural history, and remedies against *Trypeta pomonella*.

## 324b. COOK, A. J. Insecticides for bark-lice. &lt;14th Annual Rept. Secr. State Hortie. Soc. Mich. for 1884, 1885, pp. 203, 204.

Kerosene and soap for Coccidæ and Anthomyiidae.

## 325. COOK, A. J. No. 14. Entomological Department. The codling moth and bark-louse. &lt;24th Annual Rept. Secr. State Board Agriculture Mich. for 1884–85, 1886, pp. 171–175, figs. 1–3.

Habits, characters, and means against the ravages of *Carpocapsa pomonella* and *Mytilaspis pomorum*; figures both species.

## 326. COOK, A. J. No. 17. Zoological Department. The carpet beetle. &lt;25th Annual Rept. Secr. State Board Agriculture Mich. for 1885–86, 1886, pp. 223–227, fig.

History, characters, and means against ravages of *Anthrenus scrophulariæ*; figures different stages.

## 327. COOK, A. J. Four important insecticides. &lt;25th Annual Rept. Secr. State Board Agriculture Mich. for 1885–86, 1886, pp. 133–139.

Discussion of the uses of the arsenites, pyrethrum, kerosene emulsion, and gas lime.

## 328. COOK, A. J. Experiments of Department of Zoology and Botany. &lt;26th Annual Rept. Secr. State Board of Agriculture Mich. for 1886–87, 1887, pp. 40–45.

Remedies against *Conotrachelus nenuphar*, *Carpocapsa pomonella*, *Nematus ventricosus* [= *ribesii*], aphides, *Aphis mali*, *Anthomyia brassicæ*, *A. ceparum*, and *A. raphani*; notes on Paris green.

## 329. COOK, A. J. Department of Zoology and Entomology. Plant-lice and the codling moth. &lt;26th Annual Rept. Secr. State Board Agriculture Mich. for 1886–87, 1887, pp. 169–173, figs. 1–4.

General account of the remedies and enemies of Aphides; notes on insecticides, pumps; arsenites for *Carpocapsa pomonella*.

## 330. COOK, A. J. Notes on noxious insects. &lt;26th Annual Rept. Secr. State Board Agriculture Mich. for 1886–87, 1887, pp. 449–455.

Means against injurious Anthomyiidae; Notes on the plum Curculio, *Conotrachelus nenuphar*; London purple; aphides; codling moth, *Carpocapsa pomonella*; arsenites; apple maggot, *Trypeta pomonella*; cabbage butterfly; currant saw-fly; house flies; lice, and kerosene emulsion.

## 331. COOK, A. J. An hour with injurious insects. &lt;17th Annual Rept. Secr. State Hortie. Soc. Mich. 1887, 1887, pp. 446, 447.

Ravages of *Carpocapsa pomonella* and means against them.

332. COOKE, MATTHEW.\* A treatise on the insects injurious to fruit and fruit trees of the State of California, and remedies recommended for their extermination. <Sacramento, October, 1881, 72 pp., 75 figs. See: <Amer. Nat., May, 1882, v. 16, p. 410.
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Preventives against the breeding and spreading of noxious insects.
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Notes on *Lecanium oleæ*.
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341. COQUILLETT, D. W. The locust-tree borer, *Xyleutes* (= *Cossus*) *robiniae*. Its natural history and means for its destruction. <Germantown Telegraph, v. 50, No. 12.
342. COQUILLETT, D. W. The clear-winged Sesia, *Sesia* (= *Hemaris*) *diffinis*. Its natural history. <Germantown Telegraph, v. 50, No. 30.
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\* Born in Bushnille, Ireland, 16 February, 1829, and died in Sacramento, Cal., 25 August, 1887. See West American Scientist, August, 1890, v. 7, pp. 27-29.

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345. COQUILLETT, D. W. The imported cabbage-butterfly, *Pieris rapæ*. Its natural history and means for its destruction. <Germantown Telegraph, v. 50, No. 46.
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\* Dr. Fitch was born at Fitch's Point, Salem, N. Y., 24 February, 1809, and died 18 April, 1879, at Salem, N. Y. See Amer. Ent., May, 1880, v. 3, n. s., v. 1, pp. 121-123.

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Description of all stages of *Orgyia leucostigma*; ravages and remedies; describes *Trichogramma*? *orgyiae* and *T.*? *fraterna*.

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546. FITCH, A. The joint-worm in barley. <Journ. N. Y. State Agric. Soc., December, 1856, v. 7, p. 76. *Eurytoma* [= *Isosoma*] *hordei* destructive to barley in Cazenovia, N. Y.
547. FITCH, A. Report on the noxious, beneficial, and other insects of the State of New York. <Trans. N. Y. State Agric. Soc. for 1855, 1856, v. 15, pp. 409-559, pl. 1-4, 9 figs.\*

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Ravages of an acridian [probably *Caloptenus spretus*] in Scott County, Minn.; means of controlling locust ravages.

## 552. FITCH, A. Weevil in seeds from the Patent Office. &lt;Journ. N. Y. State Agric. Soc., July, 1857, v. 8, p. 29.

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## 553. FITCH, A. Entomology, No. 16. The hunter weevil in young corn. Beetles upon and worms in potato vines. Gooseberry insects. &lt;The Country Gentleman, 6 August, 1857, v. 10, p. 91. &lt;The Cultivator, September, 1857, s. 3, v. 5, p. 273.

Means against *Sphenophorus venatus* [†=*sculptilis*]; identifies *Cantharis atrata* [= *Epicauta pennsylvanica*] and *Gortyna* sp. [= *nitela*] as injurious to potato vines; an undetermined larva infesting gooseberries.

## 554. FITCH, A. Slug worm. &lt;The Country Gentleman, 27 August, 1857, v. 10, p. 145.

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## 555. FITCH, A. The May beetle. &lt;The Genesee Farmer, August, 1857, s. 2, v. 18, pp. 239–241.

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## 556. FITCH, A. Wheat midge. &lt;Journ. N. Y. State Agric. Soc., November, 1857, v. 8, pp. 67–68.

Measures necessary for the importation of the European parasite of *Cecidomyia* [= *Diplosis*] *tritici*.

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558. FITCH, A. Injurious insect on the oak. <The Country Gentleman, 5 August, 1858, v. 12, p. 74.  
Characters of *Dryocampa stigma*?; remedies.
559. FITCH, A. Entomology, No. 17. The fall web-worm. <The Country Gentleman, 14 October, 1858, v. 12, p. 239. <The Cultivator, November, 1858, s. 3, v. 6, pp. 341-342.  
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560. FITCH, A. Wheat midge. <Trans. N. Y. State Agric. Soc., for 1857, 1858, v. 17, pp. 319-320.  
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561. FITCH, A. Fourth report on the noxious and other insects of the State of New York. <Trans. N. Y. State Agric. Soc. for 1857. 1858, v. 17, pp. 687-814, 4 figs.\*

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563. FITCH, A. A new barley insect. <The Country Gentlemen, 21 April, 1859, v. 13, p. 250. <The Cultivator, May 1859, s. 3, v. 7, p. 148.  
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566. FITCH, A. Entomology, No. 19—Beetles infesting grape-vines. <The Country Gentleman, 15 September, 1859, v. 14, p. 171.  
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\* See note under No. 548.

567. FITCH, A. Entomology, No. 20—The parasitic destroyer of the Curculio. <The Country Gentleman, 6 October, 1859, v. 14, p. 221. <The Cultivator, November, 1859, s. 3, v. 7, pp. 340-341. Food habits of *Conotrachelus nenuphar*; characters of the families of hymenopterous parasites; describes and figures *Sigalphus curculionis*; its habits.
568. FITCH, A. Maple leaf-cutter. <The Country Gentleman, 6 October, 1859, v. 14, p. 225. <The Cultivator, November, 1859, s. 3, v. 7, pp. 330-331.  
Relates to *Ornix* [= *Incurvaria*] *acerifoliella*.
569. FITCH, A. Fifth report on the noxious and other insects of the State of New York. <Trans. N. Y. State Agric. Soc. for 1858, 1859, v. 18, pp. 781-854, 9 fig.\*

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Describes and figures the mines in locust leaves made by an undetermined insect.
571. FITCH, A. The Entomologist, No. 22—The seventeen-year Cicada. <The Country Gentleman, 29 March, 1860, v. 15, p. 210.  
Remarks on popular names for insects; regularity of appearance of *Cicada* [= *Tibicen*] *septendecim*; necessity of ascertaining its distribution in order to predict its future visitations.
572. [FITCH, A.] Interesting lecture on insects. <Amer. Farmer, April, 1860, ser. 5, v. 1, pp. 312-313.
573. FITCH, A. The hunter weevil. <The Country Gentleman, 14 June, 1860, v. 15, p. 384.  
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574. FITCH, A. The apple insect. <The Country Gentleman, 12 July, 1860, v. 16, pp. 32-33. <The Cultivator, August, 1860, ser. 3, v. 8, p. 260.  
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575. FITCH, A. The Entomologist, No. 23—The striped flea-beetle. <The Country Gentleman, 12 July, 1860, v. 16, p. 36. <The Cultivator, December, 1860, s. 3, v. 8, pp. 270-271.  
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\* See note under No. 548.

576. FITCH, A. Ravages of insects on forest and fruit trees. Remedy. <Journ. N. Y. State Agric. Soc., July, 1860, v. 11, pp. 21-22. <Trans. N. Y. State Agric. Soc. for 1859, 1860, v. 19, pp. 775-776. Reprint: <Cultivator and Country Gentleman, 25 July, 1878, v. 43, p. 471.  
Ravages, natural history, and means against *Lecanium aceris* [= *Pulvinaria innumcrabilis*].
577. FITCH, A. The Entomologist, No. 24—The pear blight beetle. <The Country Gentleman, 8 November, 1860, v. 16, p. 302. <The Cultivator, December, 1860, s. 3, v. 8, p. 371.  
Description of *Scolytus pyri* [= *Xyleborus dispar*]; its food-plants, habits, and remedies.
578. FITCH, A. Address on our most pernicious insects, delivered at the annual meeting [of the State Agricultural Society], February, 1859. <Trans. N. Y. State Agric. Soc. for 1859, 1860, v. 19, pp. 588-598.\*  
Treats of five species injurious to wheat and of four injurious to fruit trees; the former are *Diplosis tritici*, *Calandra granaria*, *Cecidomyia destructor*, *Isosma hordei*, and *Blissus leucopterus*; the latter are *Clisiocampa americana*, *Saperda candida*, *Sannina exitiosa*, and *Conotrachelus nenuphar*.
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Describes *Conotrachelus nenuphar*; its times of appearance, ravages, parasites, and remedies.
580. FITCH, A. The Entomologist, No. 25—The quince Tingis. <The Country Gentleman, 14 February, 1861, v. 17, p. 25.  
Describes and figures *Tingis cydoniae*; its habits and injuries; description of the immature form; use of the hydropult.
581. FITCH, A. The Entomologist, No. 26—The wheat midge. <The Country Gentleman, 1 April, 1861, v. 17, p. 226. <The Cultivator, May, 1861, s. 3, v. 9, pp. 150-151.  
Habits and transformations of *Cecidomyia* [= *Diplosis*] *tritici* and *C. cerealis* [= *D. caliptera*].
582. FITCH, A. The Entomologist, No. 27—Disappearance of the wheat midge. <The Country Gentleman, 2 May, 1861, v. 17, p. 290. <The Cultivator, June, 1861, s. 3, v. 9, p. 178. <Amer. Farmer, June, 1861, s. 5, v. 2, pp. 378-379.  
Portions of eastern New York, Vermont, and Canada west, exempt from the attacks of *Cecidomyia* [= *Diplosis*] *tritici*.
583. FITCH, A. The Entomologist, No. 28—The apple tree borer. <The Country Gentleman, 6 June, 1861, v. 17, p. 370. <The Cultivator, July, 1861, s. 3, v. 9, p. 209.  
Description of *Bostrichus* [= *Amphicerus*] *bicaudatus*; its distribution, ravages and means against it.

\* Nos. 578-579 were published separately with half title cover. <Albany, 1860, 8 vo., pp. 28.

† See note under No. 578.

584. FITCH, A. The army-worm and cut-worm. <The Country Gentleman, 4 July, 1861, v. 18, p. 18.  
Habits of cut-worms (larvæ of Noctuidæ); the army-worm probably a gregarious and migratory cut-worm.
585. [FITCH, A.] The cut-worm and corn-grub killer. <The Country Gentleman, 11 July, 1861, v. 18, p. 33. <The Cultivator, August, 1861, ser. 3, v. 9, p. 259.  
Characters and habits of *Calosoma calidum*.
586. FITCH, A. The Entomologist, No. 29—The army-worm moth. <The Country Gentleman, 25 July, 1861, v. 18, p. 66. <The Cultivator, September, 1861, s. 3, v. 9, pp. 278-279.  
History of the identification of the army-worm moth as *Leucania unipuncta*; description of the same.
587. FITCH, A. The hunter weevil. <The Country Gentleman, 1 August, 1861, v. 18, p. 80. <The Cultivator, September, 1861, s. 3, v. 9, p. 268.  
Ravages of *Sphenophorus venatus* [= *sculptilis*.]
588. FITCH, A. The grain Aphis. <The Country Gentleman, 8 August, 1861, v. 18, p. 96. <The Cultivator, September, 1861, s. 3, v. 9, p. 290.  
Ravages of *Aphis avenæ* [= *Nectarophora granaria*]; its manner of attack; enemies and remedies.
589. FITCH, A. The Entomologist, No. 30—The grain Aphis. <The Country Gentleman, 15 August, 1861, v. 18, p. 114.  
Habits, parasites, and enemies of *Aphis avenæ* [= *Nectarophora granaria*]. *Cecidomyia* [= *Diplosis*] *tritici* injurious to wheat in eastern New York; recommends the importation of its natural parasites.
590. FITCH, A. Snapping beetle—Blight on apple trees. <The Country Gentleman, 22 August, 1861, v. 18, p. 130. <The Cultivator, September, 1861, s. 3, v. 9, p. 294.  
Undetermined elaterid not the cause of blight in apple trees.
591. FITCH, A. The new insect in rye. <Amer. Agric., August, 1861, v. 20, pp. 235-236.  
Ravages of *Eurytoma* [= *Isosoma*] *hordei*; comparative characters and habits of allied species.
592. FITCH, A. The army worm's parasite. <The Cultivator, August, 1861.  
Describes *Ichneumon leucaniæ*.
593. FITCH, A. The locust insect. <The Country Gentleman, 5 September, 1861, v. 18, p. 161.  
Characters of *Hispa scutellaris* [= *Odontota dorsalis*.]
594. FITCH, A. An important caution. <The Country Gentleman, 5 September, 1861, v. 18, p. 161. <The Cultivator, October, 1861, ser. 3, v. 9, p. 303.  
Injuries to animals from feeding in grain fields infested with grain aphidids and their attendant coccinellids.

595. FITCH, A. The black blistering fly. <The Country Gentleman, 19 September, 1861, v. 18, p. 193. <The Cultivator, October, 1861, ser. 3, v. 9, p. 325.  
Food-plants, characters, and means against *Cantharis* [= *Epicauta*] *pennsylvanica*.
596. [FITCH, A.] The army worm. <The Country Gentleman, 26 September, 1861, v. 18, p. 203.  
Habits, seasons, and ravages of *Leucania unipuncta*; remedies.
597. [FITCH, A.] The grain Aphis. <The Country Gentleman, 3 October, 1861, v. 18, p. 221. <The Cultivator, November, 1861, ser. 3, v. 9, p. 334.  
Ravages of *Aphis avenæ* [= *Nectarophora granaria*]; its characters and means against its ravages.
598. FITCH, A. The grain Aphis. <The N. Y. Observer, 17 October, 1861.  
Deals with *Aphis avenæ* [= *Nectarophora granaria*].
599. FITCH, A. Worm on grape vines. <Trans. N. Y. State Agric. Soc. for 1860, 1861, v. 20, pp. 342-343.  
Characters and ravages of *Thyreus abbotti*.
600. FITCH, A. Sixth report on the noxious and other insects of the State of New York. <Trans. N. Y. State Agric. Soc. for 1860, 1861, v. 20, pp. 745-868.\*

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Observations made during 1861 upon *Nectarophora granaria*, *Leucania unipuncta* and *Diplosis tritici*.
602. FITCH, A. The Entomologist, No. 31—Insect tumors and wounds in raspberry stalks. <The Country Gentleman, 22 May, 1862, v. 19, p. 335.  
Habits and description of *Figites rubus-caulis*; its gall; oviposition of *Ceresa bubalus* [† = *Ecanthus niveus*] in raspberry, willow, and cherry.
603. FITCH, A. The Buffalo tree-hopper. <Amer. Agric., June, 1862, v. 21, p. 172.  
Advance print of portion of the account concerning *Ceresa bubalus* given in the 12th Rept. on the insects of the State of New York. See No. 640.
604. FITCH, A. The Entomologist, No. 32—The asparagus beetle. <The Country Gentleman, 31 July, 1862, v. 20, pp. 81-82, figs.  
Ravages of *Crioceris asparagi* on Long Island; describes and figures the beetle and its larva; hand-picking as the remedy.
605. FITCH, A. The Entomologist. No. 33.—The maple Psocus, <The Country Gentleman, 4 September, 1862, v. 20, p. 162.  
Describes *Psocus aceris* [= *venosus*]; its habits and food-plants.

\* The sixth, seventh, eighth, and ninth reports were also issued under one cover with title and index. <Albany, 1865, pp. 260, pl. 1-4, 4 figs.

606. FITCH, A. The grain Aphis. <Prairie Farmer, 8 November, 1862, pp. 291-292. S.-b. No.2, pp. 102-103.  
Habits and ravages of *Aphis avenæ* [= *Nectarophora granaria*.]
607. FITCH, A. Insects the past year (1861). <Trans. N. Y. State Agric. Soc. for 1861, 1862, v. 21, pp. 27-31.  
Brief notice of *Aphis avenæ* [= *Nectarophora granaria*], *Leucania unipuncta*, and *Cecidomyia* [= *Diplosis*] *tritici*.
608. FITCH, A. Seventh report on the noxious and other insects of the State of New York. <Trans. N. Y. State Agric. Soc. for 1861, 1862, v. 21, pp. 813-859, 1 pl.\*

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Characters of *Anthomyia ceparum*; its habits, ravages, food-plants, and remedies.
610. FITCH, A. The May beetle. Worm on grape-vines. <The Country Gentleman, 18 June, 1863, v. 21, p. 399.  
*Lachnosterna fusca* injurious to cherry and plum trees; remedies; description of *Spilosoma virginica*; its injuries to grape leaves; hand-picking as a remedy.
611. [FITCH, A.] The asparagus beetle. <Amer. Agric., June, 1863, v. 22, p. 166.  
Chickens as destroyers of *Crioceris asparagi*.
612. FITCH, A. A grape-vine beetle and rose bug. <The Country Gentleman, 23 July, 1863, v. 22, p. 65.  
Abundance of *Haltica chalybea*; its injuries; ravages of *Macroductylus subspinosus*.
613. FITCH, A. A brief account of the most important injurious insects of the United States. <Illustrated Annual of Rural Affairs. Separate: <Albany, 1863, pp. 6 + 293-321.  
General remarks upon insects, their transformations, etc.; describes and figures insects injurious to fruit trees, to grain crops, and to gardens; the habits, injuries, enemies, and remedies of many of the species are given.
614. FITCH, A. Insects. The grain Aphis, wheat midge, etc. <Trans. N. Y. State Agric. Soc. for 1862, 1863, v. 22, pp. 32-33.  
Sudden appearance of *Aphis avenæ* [= *Nectarophora granaria*] in New York and New England; its extension westward; habits and enemies of the same; brief notes on *Cecidomyia* [= *Diplosis*] *tritici*.
615. FITCH, A. Locust tree borer. <Trans. N. Y. State Agric. Soc. for 1862, 1863, v. 22, p. 88.  
*Clytus* [= *Cyllene*] *robiniae* occasionally attacks the honey locust; note on *Ctenucha latreillana* [= *virginica*].

\* See note under No. 600.

616. FITCH, A. Borers in the honey locust. <Trans. N. Y. State Agric. Soc. for 1862, 1863, v. 22, pp. 117-118.  
Identity of *Clytus* [= *Cyllene*] *robiniae*, *C.* [= *C.*] *pictus*, and *C. flexuosus* [= *C. robiniae*]; its early stages; ravages in the honey locust.

617. FITCH, A. Eighth report on the noxious and other insects of the State of New York. <Trans. N. Y. State Agric. Soc. for 1862, 1863, v. 22, pp. 657-691, 2 figs.\*

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619. FITCH, A. The hunter weevil. <The Country Gentleman, 16 June, 1864, v. 23, p. 384.

*Sphenophorus venatus* [† = *sculptilis*] injurious to young corn.

620. FITCH, A. The Entomologist, No. 34. The Buffalo tree-hopper. <The Country Gentleman, 16 June, 1864, v. 23, p. 386, figs.

Description of punctures in raspberry twig and of the eggs of *Ceresa bubalus* [† = *Ecanthus niveus*]; describes and figures *Ceresa* sp. and its eggs; description of its oviposition and the young insect; remedies.

621. FITCH, A. The five-marked Coccinella destroying plant-lice. <The Country Gentleman, 21 July, 1864, v. 24, p. 47.

*Coccinella 5-notata* [= *transversoguttata*] as an enemy to *Myzus cerasi*.

622. FITCH, A. The Entomologist, No. 35.—The Nebraska bee-killer. <The Country Gentleman, 28 July, 1864, v. 24, p. 63.

Description, habits, and odor of *Trupanea*. [= *Promachus*] *apivora*; habits of Asilidæ.

623. FITCH, A. A curious insect. <The Country Gentleman, 5 August, 1864, v. 24, p. 79.

Habits and food plants of *Enchenopa binotata*.

624. FITCH, A. Ninth report on the noxious and other insects of the State of New York. <Trans. N. Y. State Agric. Soc. for 1863, 1864, v. 23, pp. 778-823, 1 plate, 2 figs. Separate: <Albany, 1865, pp. 56.\*

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Destructiveness of *Aphis* [= *Phorodon*] *humuli*; enemies and remedies.

626. FITCH, A. Plant lice. The hop aphis. <The Country Gentleman, 3 August, 1865, v. 26, p. 82.

Life habits of Aphididæ and of *Aphis* [= *Phorodon*] *humuli*.

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\*See note under No. 600.

627. FITCH, A. Entomological correspondence. <The Country Gentleman, 21 September, 1865, v. 26, pp. 190-191.  
Describes larva and imago of *Datana ministra*; remedies; history and description of *Anoplitis scutellaris* [= *Odontota dorsalis*]; larva of *Cynthia* [= *Pyra-meis*] *cardui* eating leaves of Canada thistle and parasitized by *Banchus* [= *Limneria*] *fugitiva*.
628. FITCH, A. Address delivered before the annual meeting of the State Agricultural Society, Albany, February 8, 1865. <Trans. N. Y. State Agric. Soc. for 1864, 1865, v. 24, pp. 111-116.  
Ravages of *Aphis* [= *Phorodon*] *humuli*; enemies and remedies.
629. FITCH, A. Tenth report on the noxious and other insects of the State of New York. <Trans. N. Y. State Agric. Soc., for 1864, 1865, v. 24, pp. 433-461, 1 pl., 3 figs.\*

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632. FITCH, A. Grape beetle. <Rural American, 1 October, 1866. S.-b. No. 2, p. 12.  
Characters, habits, and food-plants of *Pelidnota punctata*.
633. FITCH, A. The cotton worm. <The Country Gentleman, 18 October, 1866, v. 28, p. 257. S.-b. No. 2, p. 17.  
Larval characters and food plants of *Terias nicippe* and *Pamphila oileus*.
634. FITCH, A. Insects which injure grain crops.—I. The wheat midge. <The Country Gentleman, 8 November, 1866, v. 28, p. 306. S.-b. No. 2, p. 32.  
Natural history and figures of *Cecidomyia* [= *Diplosis*] *tritici*.
635. FITCH, A. Insects which injure grain crops.—II. The Hessian fly. <The Country Gentleman, 29 November, 1866, v. 28, p. 354. S.-b. No. 2, p. 37.  
History and figures of *Cecidomyia destructor* and its parasites.
636. FITCH, A. Ant enemies to cut-worms. <Trans. N. Y. State Agric. Soc. for 1865, 1866, v. 25, p. 133.  
Attack of a black ant upon a cut-worm; food-habits of *Myrmica* [= *Monomorium*] *molestum*.
637. FITCH, A. Currant borers. <The Country Gentleman, 13 June, 1867, v. 29, p. 386.  
Work of *Psenocerus supernotatus* in currant stalk.

\* The tenth and eleventh reports were also issued under one cover, with title and index. <Albany, 1867, pp. 90, 18 figs.

638. FITCH, A. Eleventh report on the noxious, beneficial, and other insects of the State of New York. <Trans. N. Y. State Agric. Soc. for 1866, 1867, v. 26, pp. 487-543, 15 figs.\*

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Describes four grape-leaf galls; only one *Pemphigus vitifoliæ* [= *Phylloxera vastatrix*] is named.

640. FITCH, A. Twelfth report on the noxious, beneficial, and other insects of the State of New York. <Trans. N. Y. State Agric. Soc. for 1867, 1868, v. 27, pt. 2, pp. 889-932.

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Habits and characters of *Æschna heros*.

642. FITCH, A. Grain Aphis in eastern Tennessee. <The Country Gentleman, 15 July, 1869, v. 34, p. 35.

Abundance of *Aphis avenæ* [= *Nectarophora granaria*]; its natural enemies.

643. FITCH, A. The garden millepedes. <The Country Gentleman, 1869, v. 34; 11 November, p. 381; 18 November, p. 402; 25 November, pp. 421, 422, 4 figs.

Characters, food plants, and life habits of myriopods.

644. FITCH, A. Garden insects. <Illustrated Ann. Reg. Rural Affairs, 1869, v. 5, pp. 91-104, figs. 1-16.

Brief notices of *Anthomyia ceparum*, *Cantharis* [= *Epicauta*] *vittata*, *Anthomyia raphani*; *A brassicæ*, Myriapoda (centipedes) Agrotidæ (cut-worms), Halticinæ (flea-beetles), *Smynturus hortensis*, *Cerostoma brassicella* [= *Plutella cruciferarum*] and *Pieris oleracea*.

645. FITCH, A. Garden insects. <Illustrated Ann. Reg. Rural Affairs, 1869, v. 5, pp. 197-212, figs. 1-22.

Brief notices of *Aphis brassicæ*, *Diabrotica vittata*, *Anasa tristis*, *Coccinella* [= *Epilachna*] *borealis*, *Crioceris asparagi*, *Sphinx quinquemaculatus* [= *Protoparce celeus*], *S.* [= *P.*] *carolina*, *Doryphora 10-lineata*, *Crioceris* [= *Lema*] *trilineata*, *Epicauta vittata*, and wire-worms, larvæ of Elateridæ.

\* See note under No. 629.

646. FITCH, A. Thirteenth report on the noxious, beneficial, and other insects of the State of New York. <Trans. N. Y. State Agric. Soc. for 1869, 1870, v. 29, pp. 495-566.

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Abundance of lampyrid larvæ on snow; their characters, habits, and the cause for their presence on the snow.

648. FITCH, A. Fourteenth report on the noxious, beneficial, and other insects of the State of New York. <Trans. N. Y. State Agric. Soc. for 1870, 1872, v. 30, pp. 355-381.

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Means against *Carpocapsa pomonella*.

650. FLAGG, GEO. W. Lice on sheep. <New England Farmer, v. 53.

Characters, habits, and remedies against *Trichodectes sphærocephalus* [= *Pediculus ovis*]; description and habits of *Hyphobosca crina* [= *Melophagus ovinus?*].

651. FLETCHER, JAMES. An outline sketch of the Canadian Buprestidæ. <Ann. Rept. Ent. Soc. Ontario for 1878, 1879, pp. 46-54, figs. 36-37.

Sketch of the family, with notes on the principal Canadian species of economic importance.

652. FLETCHER, J. Scarabæidæ-Diggers. <Ann. Rept. Ent. Soc. Ontario for 1879, 1880, pp. 65-71, figs. 32-37.

General account, with special reference to some of the more common and injurious Canadian species.

653. FLETCHER, J. On the chief benefits derived by farmers and horticulturists from a knowledge of entomology. <Ann. Rept. Ent. Soc. Ontario for 1880, 1881, pp. 57-68, figs. 44-54.

Advantages of the study of entomology; losses caused by insects; remarks on nomenclature; divisions and characters of insects; their transformations; classification into injurious and beneficial groups.

654. FLETCHER, J. Homoptera.—The harvest flies and their allies. <Rept. Ent. Soc. Ontario for 1882, 1883, pp. 69–83, figs. 83–91.  
Characters and divisions of the Hemiptera; habits of the Homoptera, and of many species common in Canada; remedies against their ravages.
655. FLETCHER, J. Report of the Entomologist. <Report Minister of Agriculture. Separate: <1884, 7 pp.  
Importance of economic entomology; brief summary of the injuries to grain crops, hay and clover, root crops, fruits, and forest trees; disappearance of *Bruchus pisi*; ravages of the black cut-worm.
656. FLETCHER, J. The larch saw-fly—*Nematus erichsonii* (Hartig). <15th Ann. Rept. Ent. Soc. Ontario 1885, pp. 72–77.  
Ravages, parasites, enemies, and means against *Nematus erichsonii*; its characters, early stages, and habits.
657. FLETCHER, J. Report of the Entomologist. <Report Minister of Agriculture. Separate: <1885, 56 pp.  
Notes on the principal injurious insects in 1885, ravages of and means against *Diplosis tritici*; ravages of *Caloptenus femur-rubrum*; figures *C. femur-rubrum* and *C. spretus*; ravages of and means against *Calandra oryza* and *Cecidomyia leguminicola*; figures *C. leguminicola* ♂ and ♀, with details of structure and the larva; insects injurious to root crops and vegetables: *Aphis brassicæ*, *Polyphylla decemlineata*, *Anthomyia* sp. *A. raphani*, *Psila rosæ*, *Doryphora 10-lineata*, Elaterid sp., Julidæ, *Anthomyia brassicæ*, *Pieris rapæ*, Agrotidæ, and *Diabrotica vittata*; insects affecting fruits: *Mytilaspis pomorum*, *Carpocapsa pomonella*, *Anisopteryx* [= *Paleaerita*] *vernata*, *A. pometaria*, *Tmetocera ocellana*, *Conotrachelus nenuphar*, *Phylloxera vastatrix*, *Nematus ventricosus* [= *ribesii*], *Macroductylus subspinosus*, *Dakrumba convolutella*, *Myzus ribis*, *Anthonomus rubidus* [= *helvolus*], and *Ægeria tipuliformis*; insects injurious to forest and shade trees: *Nematus erichsonii*, *Tortrix fumiferana*, *Lophyrus abietis*, *Glycobius* [= *Plagionotus*] *speciosus*, *Incurvaria acerifoliella*, *Edema albifrons*, and *Clisiocampa disstria*; insects injurious to garden plants; history of *Phorbia* [= *Anthomyia*] *ceparum*; figures the larva and adult; means against it; address on insects injurious to fruit trees and on some of the more important insecticides used against them.
658. FLETCHER, J. Report of the Entomologist and Botanist. <Report Minister of Agriculture. Separate: <1887, 43 pp., 21 figs.  
Brief statements, consisting chiefly of the mode of attack and the remedies against *Diplosis tritici*, *Meromyza americana*, *Psila rosæ*, *Anthomyia brassicæ*, *A. raphani*, *Phorbia* [= *Anthomyia*] *ceparum*, *Siphonophora arenæ* [= *Nectarophora granaria*], *Aphis brassicæ*, *A. mali*, *Mytilaspis pomorum*, *Erythro-neura* [= *Typhlocyba*] *vitis*, *Lecanium ribis*, *Bruchus pisi*, *Phyllotreta vittata*, *Entomoseelis adonidis*, *Xyleborus dispar*, *Bytturus unicolor*, *Anthonomus musculus* [= *signatus*], *Podapion gallicola*, *Dendroctonus rufipennis*, *Isosoma hordei*, *Nematus erichsoni*, *Hylotoma dulciaria*, *Lcneania unipuncta*, *Pieris rapæ*, *Carpocapsa pomonella*, *Clisiocampa disstria*, *C. americana*, *C. californica*, *Edemasia concinna*, *Cidaria diversilineata*, and *Eudryas grata*; notes on larvae of Elateridæ injuring oats and potatoes; *Colius philodice*, clover; *Doryphora 10-lineata* and *Epicauta maculata*, potato; *Papilio asterias*, carrot; *Nematus ventricosus* [= *ribesii*], *Anthonomus rubidus* [= *helvolus*], and *Grapta progne*, currant; *Monohammus confusor*, *M. seutellatus*, pine; and *Halisidota sobrina*, spruce.

659. FLINT, CHARLES L. [Army worm.] <Harris's Insects injurious to vegetation, 1862, pp. 627-630, f. 274-278.  
Descriptions and figures of *Leucania unipuncta*; habits, ravages, and means against them; enemies and parasites.
660. FLINT, WESTON. The croton bug as a library pest. <Library Journal, September-October, 1879, v. 4, pp. 376-377. See: <Academy, 6 December, 1879, p. 409.  
Ravages of and means against *Blatta* [= *Ectobia*] *germanica* and *B.* [= *Stylopyga*] *orientalis*.
661. FORBES, STEPHEN ALFRED.\* The food of birds. <Trans. Ill. Hortic. Soc., 1876, n. s., v. 10, pp. 37-44.  
Value of birds to horticulture.
662. FORBES, S. A. The food of Illinois fishes. <Bull. No. 2, Ill. State Lab. Nat. Hist., June, 1878, v. 1, pp. 71-86.  
Details of the food habits of 54 species of Illinois fishes.
663. FORBES, S. A. The food of birds. <Trans. Ill. Hortic. Soc., 1878, n. s., v. 12, pp. 140-145.  
Discusses the insect food of birds.
664. FORBES, S. A. The food of birds. The thrush family. <Trans. Ill. Hortic. Soc., 1879, n. s., v. 13, pp. 120-172. Extract: <Amer. Nat., June, 1880, v. 14, p. 448.  
Detailed report on the food of thrushes in Illinois.
665. FORBES, S. A. The food habits of thrushes. <Amer. Ent., January, 1880 [v. 3], n. s., v. 1, pp. 12-13.  
Summary of the insect constituents in the food of Turdidæ.
666. FORBES, S. A. The maple-tree bark-louse. <Bloomington [Ill.] Daily Leader, 3 August, 1880.  
A *resumé* of the published history of, including an account of the effects of its injury, the natural checks upon its increase, and artificial remedies.
667. FORBES, S. A. The food of the bluebird (*Sialia sialis*, L.). <Amer. Ent., 1880 [v. 3], n. s., v. 1; September, pp. 215-218; October, pp. 231-234.  
Percentages of insect and plant constituents in the food of *Sialia sialis*; economic usefulness of the same.
668. FORBES, S. A. The food of the darters. <Amer. Nat., October, 1880, v. 14, pp. 697-703.  
Food of the Etheostomatinae, with tables showing groups of animals devoured by the same.
669. FORBES, S. A. The food of fishes. <Bull. No. 3, Ill. State Lab. Nat. Hist., November, 1880, v. 1, pp. 18-65.  
Elaborate account of the food of the Acanthopteri, young and adult, of Illinois.

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\*Professor Forbes was born in Stephenson County, Ill., in 1844. See: <Trans. Ill. Hortic. Soc. for 1889-1890, n. s., v. 23, pp. 182-186.

670. FORBES, S. A. On the food of young fishes. <Bull. No. 3, Ill. State Lab. Nat. Hist., November, 1880, v. 1, pp. 66-79. <Proc. Cent. Fishcultural Soc., v. 2, p. 10.  
Facts relating to the food of the fresh-water fishes of Illinois during the first period of life.
671. FORBES, S. A. The food of birds. <Bull. No. 3, Ill. State Lab. Nat. Hist., November, 1880, v. 1, pp. 80-148.  
Result of an investigation undertaken to determine the exact relation of various species of birds, and of the class in general, to agriculture and horticulture.
672. FORBES, S. A. Notes on insectivorous Coleoptera. <Bull. No. 3, Ill. State Lab. Nat. Hist., November, 1880, v. 1, pp. 153-160.  
Deals with the mouth structures of the Carabidæ; their food; the food of Podabrus and of several Coccinellidæ.
673. FORBES, S. A. Supplementary report on the food of the thrush family. <Trans. Ill. Hortic. Soc., 1880, n. s., v. 14, pp. 106-126.  
Detailed report on the food of the Saxicolidæ.
674. FORBES, S. A. A few notes on the food of the meadow lark. <Trans. Ill. Hortic. Soc., 1880, n. s., v. 14, pp. 234-237.  
Food habits indicate the usefulness of the meadow lark.
675. FORBES, S. A. Supplementary note on the food of the blue-bird. <Amer. Nat., January, 1881, v. 15, pp. 66-67.  
Food habits of *Sialia sialis* in August and September.
676. FORBES, S. A. The English sparrow in Illinois. <Amer. Nat., May, 1881, v. 15, pp. 392-393.  
Relative amount of insect and of other food found in the stomach of *Passer domesticus*.
677. FORBES, S. A. The army worm. <Bloomington Pantagraph, 28 July, 1881.  
Ravages of *Leucania unipuncta* in McLean and adjacent counties; natural history, injuries, and remedies.
678. FORBES, S. A. Birds and canker worms. <Amer. Agric., November, 1881, v. 40, pp. 482-483; January, 1882, v. 41, pp. 18-19.  
General report of a study made of the effect of birds upon the multiplication of the canker worm in an orchard in Illinois.
679. FORBES, S. A. The relations of birds to horticulture. <Rept. Mo. State Hortic. Soc., 1880-81, pp. 170-184.  
Food relations of the Turdidæ.
680. FORBES, S. A. The ornithological balance wheel. <Trans. Ill. State Hortic. Soc., 1881, n. s., v. 15, pp. 120-131. Extract: <Rept. State Hortic. Soc. Mich., 1881, p. 203. <Pacific Rural Press, 21 January, 1882. <Shawnee News, 13 February, 1882.  
Relations of birds to army worms, canker worms, and chinch bugs.
681. FORBES, S. A. *Aphis viticola*. <Chicago Tribune, July, 1882.  
Letter to a correspondent, describing *Aphis viticola*, noting parasites which accompanied examples sent, and mentioning the usual remedies.

682. FORBES, S. A. The chinch bug in 1882: Field notes. <Illinois Crop Prospects, 1 August, 1882, p. 77. <Farmers' Review, 19 October, 1882.

Brief notice of the unusual history of *Blissus leucopterus* in 1882, due to long-continued cool and rainy weather. Sundry experiments reported, including dissections of *Lasius flavus* and *Agonoderus comma* taken among chinch bugs. First mention of a supposed bacterial parasite of the chinch bug. Dilute kerosene emulsion found to be fatal to chinch bugs.

683. FORBES, S. A. The corn root-worm in McLean County. <Bloomington Leader, September, 1882.

Ravages of *Diabrotica longicornis*; rotation of crops a complete remedy.

684. FORBES, S. A. Bacterium a parasite of the chinch bug. <Amer. Nat., October, 1882, v. 16, p. 824-825. Abstract: <Prairie Farmer, 1882.

Abundance of *Bacterium termo*? in the alimentary canal of *Blissus leucopterus*.

- 684a. FORBES, S. A. Notes on weevils and other granary pests. <Farmers' Review, 1 December, 1882.

A short general discussion of the subject, called out by a correspondent, with suggestion of remedies.

685. FORBES, S. A. Another chinch bug parasite. <Prairie Farmer, 9 December, 1882.

1. Suggestion that white fungus on dead chinch bugs in Kansas may be identical with *Entomophthora* or *Empusa* which destroyed chinch bugs near Jacksonville, Ill. 2. Note of successful artificial cultures of *Bacterium* parasite of chinch bug, *Micrococcus insectorum*. 3. Recognition of the subject as of some promise, and one warranting careful investigation. 4. Reports development of only one brood of chinch bugs in Northern Illinois in 1882 which, in connection with their destruction by parasites or some unknown cause, makes unlikely any disastrous outbreak in that region in 1883.

686. FORBES, S. A. The corn root-worm (*Diabrotica longicornis*, Say). <Illinois crops for 1882, p. 122. <Prairie Farmer, 30 December, 1882, figs. <Cultivator and Country Gentl., 25 January, 1883. <Farmer and Fruit Grower, 24 January, 1883. <Farm and Fireside, 15 April, 1883.

Life history; character and amount of injury; remedy.

687. FORBES, S. A. The "cherry slug" (*Selandria cerasi*). <Prairie Farmer, 1882.

Report of serious damage by *Selandria* [= *Eriocampa*] *cerasi* in northern Illinois; describes the larva, and gives natural history, character of injury, and remedies.

688. FORBES, S. A. Report upon ornithology and entomology: Notes on economic ornithology. <Trans. Ill. State Hortic. Soc., 1882, n. s., v. 16, pp. 58-71.

Advantages of the joint study of ornithology and entomology; food of arboreal birds during spring and fall migrations, and in winter; summary for the year; notes on birds and canker worms.

689. FORBES, S. A. Contributions to Horticultural entomology. 1. The strawberry crown-borer (*Tyloderma fragariae* Riley). 2. The strawberry root-worm (*Paria aterrima* Haldeman). <Trans. Ill. State Hortic. Soc., 1882, n. s., v. 16, p. 199. Life histories of *Tyloderma fragariae* and *Paria aterrima* [= *Typophorus canellus*]; their injuries, enemies, preventives, and remedies.
690. FORBES, S. A. Insects affecting corn. <Prairie Farmer, 24 February, 1883. See: <Advance Farmer, July, 1883. Introduction to address read before a farmers' institute, giving objects, subject matter, and methods of economic entomology, as indicating the extent and intricacy of the subject, and mentioning observation, record, generalization, experiment, and verification, as the processes necessary to its mastery.
691. FORBES, S. A. A new wheat insect. The wheat bulb worm. <Illinois Crop Prospects, 1 April, 1883, p. 16. See: <Colman's Rural World, 24 May, 1883. <Farmers' Review, 7 June, 1883. <The Talk, 29 June, 1883. <Farm and Fireside, 15 May, 1883. <Pacific Rural Press, 12 May, 1883. <Amer. Nat., October, 1883, v. 17, p. 1073. Serious local damage by *Meromyza americana* reported from central and southern Illinois where it has been confounded with the Hessian fly. The larva is described and figured; its injuries to vegetation are characterized, and a few points in the life history of the species are given.
692. FORBES, S. A. Experiments on chinch-bugs. <Bull. No. 2, Div. Ent. U. S. Dept. Agric. [17 April], 1883, pp. 23-25. See Part 3, No. 2165, p. 302.
693. FORBES, S. A. The Strawberry crown borer (*Tyloderma fragariae* Riley). <Illinois Crop Prospects, 1 May, 1883, p. 42. Life history of *Tyloderma fragariae*; habits of larva; character and extent of its injuries; description of beetle, suggestion for its destruction, and recommendation for starting new plantations.
694. FORBES, S. A. [Note on *Lygus lineolaris*.] <Farmer and Fruit Grower, 23 May, 1883.
695. FORBES, S. A. A new corn insect. <Bloomington Pantagraph, 29 May, 1883.
696. FORBES, S. A. The regulative action of birds upon insect oscillations. <Bull. No. 6, Ill. State Lab. Nat. Hist., May, 1883, v. 1, pp. 3-32. See: <Bull. Nutt. Ornith. Club, April, 1883, v. 8, p. 105. <Amer. Nat., June, 1883, v. 17, p. 671. <Farm and Fireside, 1883: 15 July, 1 September. <Cultivator and Country Gentl., 1883, v. 49; 13, 27 September. <Gardener's Mo. and Hortic., 1883, v. 25, p. 62. Food habits of various species of birds when insects are unusually and excessively abundant, discussion, tables, and details.
697. FORBES, S. A. The food relations of the Carabidæ and Coccinellidæ. <Bull. No. 6, Ill. State Lab. Nat. Hist., May, 1883, v. 1, pp. 33-64. See: <Can. Ent., January, 1883, v. 15, p. 13.

## 697. FORBES, S. A.—Continued.

<Rept. Ent. Soc. Ont., 1883, p. 79. <Amer. Nat., April, 1883, v. 17, p. 419.

Discussion of the food of various species of Carabidæ and Coccinellidæ under general circumstances and under conditions relating to particularly injurious species; summary and discussion of the food of each family as a unit; tables showing food under ordinary circumstances, under peculiar conditions, and under all the circumstances taken together.

## 698. FORBES, S. A. The food of the smaller fresh-water fishes. &lt;Bull. No. 6, Ill. State Lab. Nat. Hist., May, 1883, v. 1, pp. 65-94.

Summarization of observations on the food habits of some of the smaller fishes of Illinois; prevalence of limophagous habits.

## 699. FORBES, S. A. The striped blister-beetle. &lt;Farmer and Fruit Grower, 13 June, 1883. See: &lt;Ibid., 27 June, 1883.

Brief synopsis of life history of *Epicauta vittata*, with citation to Riley's account in American Naturalist (1878). Attention called to the service rendered by the larva in the destruction of grasshoppers' eggs.

700. FORBES, S. A. An enemy of wheat. The wheat bulb worm (Forbes), wheat-stem maggot (Lintner), *Meromyza americana* Fitch. <Prairie Farmer, 4 August, 1883.

Outline history of *Meromyza americana*; account of serious injury in 1889 in Fulton County, Ill., and of its occurrence throughout a large area in central and southern Illinois; different stages described and figured; life history given; injury characterized. A parasite (*Cælinius* sp.) said to be effective in limiting its increase. In case the *Meromyza* should ever become generally destructive, rotation of crops, late sowing of wheat, and prompt burning of straw after threshing are recommended.

701. FORBES, S. A. The zebra caterpillar (*Ceramica* [= *Mamestra*] *picta*). <Prairie Farmer, 11 August, 1883.

Larvæ reported as injurious to cabbages identified as *Ceramica* [= *Mamestra*] *picta*; quotes Riley and recommends pyrethrum as a remedy.

## 702. FORBES, S. A. A new insect disease. &lt;Prairie Farmer, 6 October, 1883.

Destruction of *Pieris rapæ* by a disease similar to *flacherie* of the silk worm. Study of this disease in the cabbage worm and in *Datana* larvæ shows it to be bacterial, and experiments prove the disease contagious, and that it can be conveyed to healthy insects by artificial cultures.

## 703. FORBES, S. A. Memoranda with regard to the contagious diseases of caterpillars and the possibility of using the virus of the same for economic purposes. &lt;Amer. Nat., November, 1883, v. 17, p. 1169. See: &lt;Can. Ent., September, 1883, v. 15, p. 171.

Summary of studies concerning a *Micrococcus*, abundant in *Blissus leucopterus*.

## 704. FORBES, S. A. Entomological notes of the season. &lt;Illinois Crops for 1883, Circ. No. 106, Ill. Dept. Agric., p. 177. Reprint: &lt;Prairie Farmer, 8 December, 1883. &lt;Chicago Evening Journ., 14 March, 1884. &lt;Prairie Farmer, 22 March, 1884.

Summary of the season's work in economic entomology, including brief notes on injuries by the seed corn maggot, black-headed grass maggot, *Solenop-*

## 704. FORBES, S. A.—Continued.

*sis fugax*, corn plant-louse, species of plant-lice found on sorghum and broom corn, *Diabrotica longicornis*, Hessian fly, wheat straw worm, wheat bulb worm, rose-chaffer, flea negro bug, forest tent-caterpillar, plum curculio, tarnished plant bug, and dusky plant bug. Note of the order of attack upon strawberry roots by the larvæ of *Colapsis brunnea*, *Paria aterrima* [= *Typophorus canellus*], *Scelodonta pubescens*, and of the occurrence of several wide-spread and destructive contagious diseases.

## 705. FORBES, S. A. Insects injurious to swine. &lt;Prairie Farmer, 15 December, 1883.

Brief illustrated account of the most important Diptera, Hemiptera, and Arachnida which infest domestic animals; mode of their attack; description of hog louse; life history and nature of its injury; characteristics of disease produced by hog mite; description of the adult female; hints as to methods of destruction; short discussion of Entozoa infesting swine.

## 706. FORBES, S. A. On a contagious disease of caterpillars. &lt;Trans. Ill. State Hortic. Soc., 1883, n. s., v. 17, pp. 29-41. See: &lt;Farmers' Review, 27 December, 1883, p. 107.

Observations and experiments showing that the contagious diseases of insects may prove a means of defense against injurious insects.

## 707. FORBES, S. A. Insects affecting the strawberry. &lt;Trans. Miss. Valley Hortic. Soc., for 1883, 1883, v. 1, pp. 50-85, figs. 1-22. See: &lt;Prairie Farmer, 1883, 17 March, 7 April, 9 June. &lt;Moore's Rural New Yorker, 31 March, 1883. &lt;Trans. Wisc. State Hortic. Soc., 1883, p. 1.

Treats of *Emphytus* [= *Harpiphorus*] *maculatus*, *Osmia canadensis*, *Nemato-campa filamentaria*, *Angerona crocataria*, *Acronycta oblongata*, *Leucania unipuncta*, *Anchylopera* [= *Phoxopteris*] *fragaria*, *Exartema* [= *Eccopsis*] *permundana*, *Loxotania fragariae* [= *Ptycholoma persicana*], *Colaspis flavida*, *Paria aterrima* [= *Typophorus canellus*], *P. sexnotata* [= *Typophorus canellus*], *Caloptenus spretus*, *Acridium americanum*, *Siphonophora fragariae*, *Tetrigoniid* sp., *Nysius destructor* [= *angustatus*], *Thyreocoris* [= *Corimelana*] *pulicaria*, *Anarsia lineatella*, *Otiorynchus sulcatus*, *Tyloclerma fragariae*, *Formicidæ*, *Lachnosterna* sp., and *Cotalpa lanigera*; their habits, characters, ravages, and means against them; general discussion; calendar of strawberry insects.

## 708. FORBES, S. A. Twelfth report of the State entomologist on the noxious and beneficial insects of the State of Illinois. First annual report of S. A. Forbes, for the year 1882. &lt;Trans. Dept. Agric. State of Illinois for 1882, 1883, n. s., v. 12, 154+10 pp., 31 figs. Separate: &lt;Springfield, Ill., 1883.

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## 709. FORBES, S. A. Birds in relation to agriculture. &lt;Stoddart's Encyclopædia Americana, 1883, v. 1, pp. 131-134, figs. 1-6.

General remarks on the agricultural relations of birds; brief account of the food of a few of the more important species.

## 710. FORBES, S. A. The scale insect ["rose scale"]. &lt;Cobden Sentinel, 14 February, 1884.

Answer to correspondent, who sends *Diaspis rosæ* from the raspberry; life history outlined; and economic recommendations made.

711. FORBES, S. A. The tarnished plant bug (*Lygus lineolaris* Beauv.). <Farmers' Review, 28 February, 1884. Reprint: <Ann. Rept. Minn. State Hortic. Soc., 1884, p. 339.

General description of *Lygus lineolaris*, with some account of its habits and life history, and of remedial measures.

## 712. FORBES, S. A. On the life histories and immature stages of three Eumolpini. &lt;Psyche, February, 1884, v. 4, p. 123.

Treats of *Colaspis brunnea*, *Paria aterrima* [= *Typophorus canellus*] and *Scelodonta pubescens*† [= *nebulosus*].

## 713. FORBES, S. A. [Remedies for the cabbage worm.] &lt;Alton Weekly Telegraph, 17 April, 1884. &lt;Trans. Ill. State Hortic. Soc., 1884, v. 18, pp. 258-259.

Means against *Pieris rapæ*.

## 714. FORBES, S. A. Thirteenth report of the State Entomologist on the noxious and beneficial insects of the State of Illinois. Second annual report of S. A. Forbes, for the year 1883, &lt;Trans. Dept. Agric. State of Illinois for 1883, 1884, v. 12, 203 + 21. pp., pl. 1-15. Separate: &lt;Springfield, Ill., April, 1884, 203 + 21 pp., pl. 1-15.

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715. FORBES, S. A. Plant lice. <Prairie Farmer, 3 May, 1884.  
Answer to correspondent, who sends plant-lice eggs for identification; mentions remedies applicable to the situation in which they were found.
716. FORBES, S. A. [Saw-flies. *Dolerus arvensis* and *D. bicolor*.]  
<Western Rural, 17 May, 1884.  
Observation of, and dissections, do not justify charges against *Dolerus arvensis* and *D. bicolor* as injurious to fruit.
717. FORBES, S. A. [The plum curculio and cherries.] <Farmers' Review, 29 May, 1884.  
Reply to an editorial inquiry as to what insect is injuring cherries.
718. FORBES, S. A. On the life histories and immature stages of three Eumolpini. Corrective notes. <Psyche, May, 1884, v. 4, pp. 167-168.  
*Scelodonta pubescens* of a previous paper (No. 712) is *S. nebulosus*.
719. FORBES, S. A. Circular [on corn root aphid and Hessian fly].  
<Illinois Crop Prospects, May, 1884, p. 48. Reprint:  
<Farmers' Review, 5 June, 1884. See: <Prairie Farmer, 14 June, 1884.  
A request for information concerning injuries by *Aphis maidis* on ground not in corn the preceding year, and for alcoholic specimens of this aphid found on any other plant than corn; examples of *Cecidomyia destructor* solicited as an aid to the more precise determination of its life history; and serious underground injuries to corn and sorghum briefly characterized, though neither injury is definitely connected with insect attack.
720. FORBES, S. A. The wheat-straw worm. <Illinois Crop Prospects, 1 June, 1884, p. 14. Reprint: <Farmers' Review, 10 July, 1884.  
An illustrated general article on *Isosoma tritici*, giving extent and character of injury, and life history, and proposing remedies.
721. FORBES, S. A. [Reply to] "Questions about the corn root-worm."  
<Prairie Farmer, 7 June, 1884.  
To a correspondent who wants to know if salt will kill the "worms" injuring his corn—presumably *Diabrotica longicornis*—Prof. Forbes replies that he does not know of its having been tried, and mentions some mineral fertilizers as more likely to take effect. Change of crop for a single year said to exterminate the insect.
722. FORBES, S. A. [Investigating grain insects. The Hessian fly.]  
<Prairie Farmer, 7 June, 1884.  
Paragraph from a letter concerning plans inaugurated for completing the life history of the Hessian fly in the Wabash Valley.
723. FORBES, S. A. The insect dispute. <Farmer and Fruit Grower, 18 June, 1884.  
Editorial caption to a letter of Prof. Forbes, acknowledging receipt of package of strawberry leaves and crown borers. Leaves said to be badly affected with rust. Editor refers to correspondents' debate as to whether the strawberry is suffering from insect or fungus attack.
724. FORBES, S. A. What ails the larch? <Prairie Farmer, 11 October, 1884. Reprint: <Trans. Ill. State Hort. Soc., 1884, n. s., v. 18, pp. 420-421.  
Injuries of red spiders [= *Tetranychus telarius*].

725. FORBES, S. A. The grass worm, or fall army worm (*Laphygma frugiperda* Guen.). <Circular [Office of State Entomologist], 14 October, 1884. Reprint: <Prairie Farmer, 25 October, 1884. See: <Farmers' Review, 30 October, 1884.

Account of extensive damage to winter wheat in Tazewell, Mason, and Fulton counties, Ill., where hundreds of acres have been completely devoured by *Laphygma frugiperda* and resowed, the circular being designed to prepare farmers to take prompt measures against a second brood should it appear. Previous history; short description of its stages; life history; food habits; and remedies likely to be successful (mechanical destruction and poisoning); and a recommendation that wheat be not sown on oats ground the following year unless special care is taken to keep down volunteer oats previous to its sowing.

726. FORBES, S. A. A season's work in horticultural entomology. <Trans. Ill. State Hortic. Soc., 1884, n. s., v. 18, pp. 117-127. See: <Prairie Farmer, 20 December, 1884.

Notes on the habits and ravages of *Emphytus* [= *Harpiphorus*] *maculatus*, *Selandria* [= *Eriocampa*] *cerasi*, *Sphinx* [= *Ceratomia*] *catalpæ*, *Halisidota tessellata*, *Mamestra picta*, *Pempelia hammondi*, *Cacæcia rosaceana*, *Teras malivorana*, *Drosophila ampelophila*, *Paria aterrima* [= *Typophorus canellus*], *Scelodonta pubescens*, *Siphonophora minor*, *Diaspis rosæ*, and *Pulvinaria innumerabilis*.

727. FORBES, S. A. Supplementary report on insects affecting the strawberry. <Trans. Miss. Valley Hortic. Soc. for the year 1884, 1884, v. 2, pp. 234-258.

Treats of *Selandria* [= *Monostegia*] *rosæ*, *Cymatophora pampinaria*, *Phyllotreta vittata*, *Crepidodera* [= *Epitrix*] *fuscata*, *Systema blanda*, *Paria aterrima* [= *Typophorus canellus*], *Scelodonta nebulosa*, *Colaspis brunnea*, *C. tristis*, *Cacæcia rosaceana*, *C. obsoletana*, *Pulvinaria innumerabilis*, *Siphonophora minor*, *Tetranychus telarius*, *Solenopsis fugax*, *Anthonomus musculus* [= *signatus*], *Lygus lineolaris* [= *pratensis*], *Deræcoris rapidus*, *Cambala annulata*, *Allorhina nitida*, and *Otiorynchus sulcatus*; calendar of strawberry insects, classification of insect injuries with suggestions as to remedies, classification of remedial measures; modes of culture; barriers to progress; capture and direct destruction; topical application.

728. FORBES, S. A. *Æcanthus niveus*. <Farmers' Review, 16 April, 1885.

Eggs deposited in grape twigs identified as those of *Æcanthus niveus*; correspondent referred to literature of the species; remedial measures indicated, and attention called to the fact that the insect is to some extent insectivorous.

729. FORBES, S. A. The root web-worm (*Crambus zeellus* Fernald). <Illinois Crop Report, May, 1885, p. 38, fig. See: <Western Rural, 20 June, 1885.

Injuries to young corn in May and June; description of larva and imago; habits of larva; figures larva.

730. FORBES, S. A. Note on *Murgantia histrionica*. <Home and Farm, 15 June, 1885.

731. FORBES, S. A. Further notes on the root web-worm. <Statistical Rept. Ill. State Board Agric., June, 1885, p. 48, figs. Reprint: <Farmers' Review, 8 July, 1885. See: <Prairie Farmer, 11 July, 1885. <Farmers' Review, 11 June, 1885.

Ravages of and means against *Crambus zeellus*.

732. FORBES, S. A. [Coccinellid enemies of the maple bark-louse.] <Farmers' Review, 22 July, 1885.  
Letter to the editor confirming his opinion that the ravages of *Pulvinaria innumerabilis* are being checked by natural enemies (*Chilocorus bivulnerus* and *Hyperaspis signata*) which destroy its eggs.
733. FORBES, S. A.. [*Selandria cerasi*.] <Farmers' Review, 22 July, 1885.  
Recommends white hellebore and pyrethrum and outlines history.
734. FORBES, S. A. On some Illinois locusts (grasshoppers). <Statistical Rept. Ill. State Board Agric., August, 1885, p. 27.  
Report of an extraordinary outbreak of *Pezotettix* [= *Caloptenus*] *femurrubrum* and *P.* [= *C.*] *differentialis* in Illinois in 1885; brief description of the species, their life histories and habits, and of their injuries to vegetation during the season; an account of the climatic conditions to which the outbreak is probably due, of the natural influences and enemies tending to limit and suppress it, and of remedies.
735. FORBES, S. A. A new species of *Crambus* injuring corn roots. <Amer. Nat., September, 1885, v. 19, pp. 891-892.  
Relates to *Crambus zeellus*. Advance print from 14th Rept. State Entomologist of Illinois. See No. 737.
736. FORBES, S. A. Experiments on the Codling moth and Curculios (*Carpocapsa pomonella* Linn.; *Anthonomus quadrigibbus* Say; *Conotrachelus nenuphar* Herbst.). <Trans. Ill. State Hortic. Soc., for 1885, 1885, new ser., v. 19, pp. 103-119. See: <Prairie Farmer, 19 December, 1885.  
Details of experiments with Paris green, London purple, and lime; cost of experiments; damage to trees; dangers to stock and to health; natural history of the codling moth.
737. FORBES, S. A. Fourteenth report of the State Entomologist on the noxious and beneficial insects of the State of Illinois. Third annual report of S. A. Forbes for the year 1884. <Trans. Dept. Agric. State of Illinois for 1884, 1885, v. 21, 7+136+19+120 pp., pl. 1-12, 1 fig. Separate: <Springfield, Ill., 1885, 7+136+19+120 pp., pl. 1-12, 1 fig.

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## 738. FORBES, S. A. [Notes on the lesser apple leaf-roller and the green apple leaf-hopper.] &lt;Trans. Ill. State Hortic. Soc., 1885, new ser., v. 19, p. 133.

Injuries and means against.

## 739. FORBES, S. A. [The plum curculio.] &lt;Circular [Office of State Entomologist], 27 April, 1886. Reprint: &lt;Prairie Farmer.

In view of the serious ravages of this insect in apple orchards, persons having plum and apple trees in close proximity are asked to report, that opportunity may be afforded to test the feasibility of protecting the apple orchard by planting plum trees around it to serve as lures.

## 740. FORBES, S. A. Chinch bugs in Illinois. &lt;Prairie Farmer, 31 July, 1886.

Summary of life history, with economic recommendations.

## 741. FORBES, S. A. Studies on the contagious diseases of Insects. &lt;Bull. Ill. State Lab. Nat. Hist., August, 1886, v. 2, pp. 257-321, pl. 1.

Results of studies on bacterial diseases of *Pieris rapæ*, *Datana* sp., *Mamestra picta*, *Bombyx* [= *Sericaria*] *mori*, and of an epidemic of muscardine in *Clisiocampa sylvatica* [= *disstria*.]

## 742. FORBES, S. A. The chinch bug in Illinois. &lt;Circular [Office of State Entomologist], 10 September, 1886. Reprint: &lt;Prairie Farmer, 1886: 25 September; 2 October.

In view of the severe losses in southern Illinois in 1886 from chinch-bug injury and drouth, the situation is discussed at length. Extent of infested area; relative damage to various crops; life history of the species in southern Illinois; food plants, natural checks; probabilities of continued damage; prevention and remedies, and concerted action.

## 743. FORBES, S. A. Notes on the past year's work. &lt;Can. Ent., September, 1886, v. 18, p. 176. &lt;Ent. Amer., December, 1886, v. 2, p. 173.

Notes on the habits or ravages of *Cecidomyia destructor*, *C. leguminicola*, *Meromyza americana*, several Elaterids, *Diabrotica longicornis*, *Systema blanda*, *Epicarus imbricatus*, *Sphenophorus parvulus*, *Aphis maidis*, *Nematus ventricosus* [= *ribesii*], and *Crambus zeellus*.

744. FORBES, S. A. A contagious disease of the European cabbage worm, *Pieris rapæ*, and its economic application. <Proc. 7th Ann. Meeting for Prom. of Agric. Sci., 1886, p. 26.

Remarks on diseases of the lower animals; practicability of utilizing these natural checks on insect multiplication by artificial manipulation; brief classification of contagious insect diseases; symptoms of the disease of *Pieris rapæ*; micrococci of the fluids of diseased larvæ; contagious character of the disease; its irregular local distribution; culture and infection experiments.

745. FORBES, S. A. Miscellaneous essays on economic entomology by the State entomologist and his entomological assistants. <Trans. Dept. Agric. State of Illinois for 1885, 1886, v. 23, pp. 5-130. Separate: <Springfield, Ill., 1886, 130 pp.

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746. FORBES, S. A. Insects affecting corn. <Prairie Farmer, 1887, 26 February; 5 March.

Extract from a lecture before a farmers' institute. Number of species known to infest corn; prospects for the future; two classes of corn insects; reasons for increase in recent times; prevention and remedy.

747. FORBES, S. A. The chinch bug in southern Illinois. <Circular [Office of State Entomologist], 15 April, 1887. Reprint: <Prairie Farmer, 30 April, 1887.

748. FORBES, S. A. [Tipulidæ.] <Circular [Office of State Entomologist], 28 April, 1887. Reprint: <Prairie Farmer, 7 May, 1887.

Extensive and serious injury to meadows and pastures in southern Illinois, apparently due to crane-fly larvæ; describes the injury and requests information concerning its extent and amount.

749. FORBES, S. A. A new enemy to grasses. <Prairie Farmer, 14 May, 1887.

Injury to meadows and pastures, grass, and clover, in central Illinois, due to a tipulid larvæ, with a request for observation and report from those who detect this injury on their farms.

750. FORBES, S. A. Arsenical poisons for the codling moth (*Carpocapsa pomonella* Linn.). Record and discussion of experiments for 1885 and 1886. <Bull. No. 1, Office of State Entomologist Illinois, 1887. <Trans. Ill. State Hortic. Soc. for 1886, 1887, new ser., v. 20, pp. 109-118. See: <Amer. Nat., May, 1887, v. 21, p. 480. <Farmers' Review, 4 May, 1887. <Trans. Wisc. State Hortic. Soc., 1887, p. 103. <Trans. Maine State Pomol. Soc., 1886, p. 160. <Prairie Farmer, 30 April, 1887.

Demonstration that at least 70 per cent of the loss occasioned by the codling moth may be prevented by the use of paris green in a spray with water.

751. FORBES, S. A. Thrips or strawberry "midget." (*Thrips tritici* Fitch.) <Centralia, Ill., Sentinel, 1887. Reprint: <Prairie Farmer, 4 June, 1887.

The various species of Thrips, list of plants on which *tritici* is abundant; injuries by various species mentioned, with description of habits and points in life history. Warm dry weather said to favor their multiplication.

752. FORBES, S. A. Relations of ants and aphids. <Amer. Nat., June, 1887, v. 21, p. 579, 580.

Eggs of *Aphis maidis* in nests of *Lasius alienus*.

753. FORBES, S. A. Chinch bugs in Illinois. <Prairie Farmer, 6 August, 1887.

Letter to the Secretary of the State Department of Agriculture, outlining the imminent danger of an outbreak of *Blissus leucopterus* in northern Illinois in 1888 and noting the adaption of the present weather in central Illinois to its development.

754. FORBES, S. A. On the chinch bug (*Blissus leucopterus* Say) in Illinois. Present condition and prospects for 1887 and 1888. Remedial procedure recommended. <Bull. No. 2, Office of State Entomologist Illinois, 1887. <Trans. Dept. Agric. State of Illinois for 1886, 1887, v. 23, pp. 89-103. Separate: <Springfield, Ill., 1889, pp. 89-103. See: <Review Dispatch, 23 September, 1887. <Fruit Growers' Journ., 1887; 1 October; 15 October. <Prairie Farmer, 8 October, 1887.

755. FORBES, S. A. Contribution to a knowledge of the life history of the Hessian fly. (*Cecidomyia destructor* Say.) <Bull. No. 3, Office of State Entomologist Illinois, 1887. <Trans. Dept. Agric. State of Illinois for 1886, 1887, v. 23, pp. 21-34. Separate: <Springfield, Ill., 1889, pp. 21-34. See: <Prairie Farmer, 5 November, 1887. <Farm and Fireside, 6 February, 1888.

Advance sheets from 15th Report State Entomologist of Illinois.

756. FORBES, S. A. Unsolved problems in horticultural entomology. <Trans. Ill. State Hortic. Soc. for 1887, 1887, new ser., v. 21, pp. 92-97.

Relates to *Aphis mali*, *Trypeta pomonella*, *Conotrachelus nenuphar*, with brief inquiries as to muckworms, red spider, grape Phytoptus, and borers in fruit trees.

757. FORBES, S. A. On some contagious diseases of insects. <Proc. Amer. Assoc. Adv. Sci., for 1886, 1887, v. 35, p. 268.

A germ disease of *Pieris rapæ* transferred to *Pyrameis cardui*; pebrine from silkworm to other insects; notice of disease of larva of *Nephelodes violans*.

758. FORBES, S. A. The chinch bug. <Freeport Journ., 15 February, 1888.

Abstract of paper read at a farmers' institute. Chinch bugs said to be present in northern Illinois in sufficient numbers to threaten an outbreak the following season. Economic recommendations.

759. FORBES, S. A. On the present state of our knowledge concerning contagious insect diseases. <Psyche, January-February, 1888, v. 5, pp. 3-12.  
Summary of existing knowledge concerning the chief forms of contagious insect disease; analysis of various contributions with references to the literature.
760. FORBES, S. A. [Wireworms in grass and corn.] <Farmers' Review, 18 April, 1886.  
Life history, injuries, and measures of prevention and remedy.
761. FORBES, S. A. A new parasite of the Hessian fly. <Psyche, April, 1888, v. 5, pp. 39-40, 1 fig.  
Relates to *Platygaster hiemalis*.
762. FORBES, S. A. The ash-tree borer. <Farmers' Review, 30 May, 1888.  
Answer to a Kansas correspondent. Does not know that this insect has been previously reported from the West. Quotes Harris's remarks concerning it, and suggests treatment.
763. FORSLEY, C. G. On the *Cicada septendecim* 1835 in Louisiana. <Proc. Bost. Soc. Nat. Hist., 1846, v. 2, p. 162.  
Habits and habitat of *Cicada* [= *Tibicen*] *septendecim*.
764. FORSLEY, C. G. Cotton worms—*Noctua gossypii*. <New Orleans Commercial Times, 22 September, 1846.  
Habits and ravages of *Noctua gossypii* [= *Aletia xyliana*].
765. FOSTER, S. Remedy for the cankerworm. <Amer. Ent. and Bot., June, 1870, v. 2, p. 239.  
Substitution of sorghum for tar for banding against cankerworms.
766. F[OSTER], S[UEL]. Crop and market reports, Muscatine, Iowa, May 25 [1880]. <Cultivator and Country Gentl., 3 June, 1880, v. 45, p. 357.  
Means against cankerworms.
767. FOWLER, SAMUEL P. Destruction of insects injurious to vegetation. <4th Ann. Rept. Secr. Mass. Board Agric. for 1856, 1857, pp. 438-451.  
Usefulness of birds, reptiles, and Coccinellidæ; habits of and means against *Anisopteryx* [= *Paleacrita*] *vernata*, *Hyphantria textor* [= *cunea*], *Chætochilus pometellus*, *Saperda bivittata* [= *candida*], *Aphis mali*; *Conotrachelus nenuphar* and *Carpocapsa pomonella*.
768. FOX, S. H. London purple. <Amer. Ent., October, 1880, v. 3, n. s. v. 1, p. 252.  
Comparative effectiveness of London purple and Paris green.
769. FRANCIS, LUCIUS C. Curculio remedies. <Amer. Ent., April, 1869, v. 1, p. 160.  
Means against *Conotrachelus nenuphar*.
770. FRANCIS, L. C. Stinking out the Curculio. <Amer. Ent., June 1869, v. 1, p. 202.  
Bad smelling substances not necessarily repellent to insects.

771. FRENCH, GEORGE HAZEN. Hessian fly. <Prairie Farmer, 22 September, 1877.  
Notes on *Cecidomyia destructor*.
772. FRENCH, G. H. Colorado potato beetle. <Prairie Farmer, 27 October, 1877.  
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773. FRENCH, G. H. *Chrysochus auratus*. <Prairie Farmer, 22 December, 1877.  
Corn eaten by *Chrysochus auratus*.
774. FRENCH, G. H. The violet Nephelodes. <Prairie Farmer, 6 April, 1878.  
Habits of *Nephelodes violans*.
775. FRENCH, G. H. Cutworm notes. <Prairie Farmer, 11 May, 1878.  
Habits of Agrotidæ.
776. FRENCH, G. H. Raspberry slug, *Selandria rubi*. <Prairie Farmer, 18 May, 1878.  
Notes on *Selandria* [= *Monophadnus*] *rubi*.
777. FRENCH, G. H. Cabbage butterfly, *Pieris rapæ*. <Prairie Farmer, 27 July, 1878.  
Occurrence of *Pieris rapæ* at Carbondale, Ill.
778. FRENCH, G. H. Cabbage Plusia, *Plusia brassicæ*. <Rural New Yorker, 12 October, 1878.
779. FRENCH, G. H. Corn worm, *Heliothis armigera*. <Prairie Farmer, 26 October, 1878.  
Experiments with freezing the pupæ of *Heliothis armiger*.
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Habits, injuries, etc., of *Papilio asterias*, *Pieris rapæ*, *P. oleracea*, *P. protodice*, *Macrosila 5-maculata* [= *Protoparce celeus*], *M.* [= *P.*] *carolina*, *Spilosoma virginica*, *Leucarctia acræa*, *Agrotis c-nigrum*, *A. tessellata*, *A. herilis*, *A. subgothica*, *A. clandestina*, *A. saucia*, *A. suffusa* [= *ypsilon*] *Hadena devastatrix*, *Plusia ni* [= *brassicæ*], *Heliothis armiger*, *Phakellura* [= *Eudiotis*] *nitidalis*, and *Plutella xylostella*.
781. FRENCH, G. H. Moths—Lepidoptera. <7th Ann. Rept. State Entomologist of Illinois for 1877, 1878, pp. 79-106, figs. 19, 21.  
Characters, habits, ravages, and remedies of *Leucarctia acræa*, *Spilosoma virginica*, *Agrotidæ*, *Agrotis c.-nigrum*, *A. subgothica*, *A. herilis*, *A. tessellata*, *A. messoria*, *A. ypsilon*, *A. saucia*, *A. clandestina*, *Hadena devastatrix*, *H. arctica*, *Laphygma frugiperda*, *Nephelodes violans*, *Achatodes zee*, *Leucania unipuncta*, and *Heliothis armiger*.
782. FRENCH, G. H. Economic entomology of Illinois. Part 2. Lepidoptera, or butterflies and moths, and their larvæ, or caterpillars. <7th Ann. Rept. State Entomologist of Illinois for 1877, 1878, pp. 133-273, figs. 32-48.  
General account of the habits of the principal species, with remedies against their ravages; analytical tables of the families and genera.

783. FRENCH, G. H. Notes on cabbage insects. <Prairie Farmer, 25 January, 1879.  
Notes on *Pieris rapæ* and *P. protodice*.
784. FRENCH, G. H. Notes on cabbage insects. <Prairie Farmer, 8 February, 1879.  
Notes on *Plusia brassicæ*, *Plutella cruciferarum*, and Agrotidæ.
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786. FRENCH, G. H. Notes on potato insects. <Prairie Farmer, 22 February, 1879.  
Notes on *Baris* [= *Trichobaris*] *trinotata*, Aphididæ, and Cassididæ.
787. FRENCH, G. H. Notes on squash and cucumber pests. <Prairie Farmer, 1 March, 1879.  
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788. FRENCH, G. H. Cabbage worms, *Pieris rapæ*. <Prairie Farmer, 6 September, 1879.  
Salt as a remedy for *Pieris rapæ*.
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Tall corn less attacked by *Heliothis armiger* than short varieties.
790. FRENCH, G. H. A new cutworm, *Agrotis lubricans*. <Prairie Farmer, 27 December, 1879.  
Habits and characters.
791. FRENCH, G. H. Some new insect parasites. <Prairie Farmer, 10 January, 1880.  
Notes on *Microgaster utilis* and *Macrocentrus iridescens*.
792. FRENCH, G. H. Raspberry slugs, *Selandria* [= *Monophasmus*] *rubi*. <Rural New Yorker, 15 May, 1880.
793. FRENCH, G. H. Forest trees eaten by beetles. <Prairie Farmer, 24 July, 1880.
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Notes on *Pieris rapæ*, *P. protodice*, and *Pionea rimosalis*.
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Characters of an undetermined larva [= *Diabrotica longicornis*] injurious to roots of corn.
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Notes on a new corn-root insect [= *Diabrotica longicornis*].
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Notes on the life history of *Diabrotica longicornis*; remedies.
798. FRENCH, G. H. The corn root-worm. <Prairie Farmer, 18 September, 1880.  
Suggestions as to remedies and food-habits of *Diabrotica longicornis*.

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Notes on the number of broods.
800. FRENCH, G. H. The ox bot-fly, *Æstrus bovis*. <Rural New Yorker, 22 January, 1881.
801. FRENCH, G. H. The chigoe, or jigger. <Prairie Farmer, 29 January, 1881.  
Notes on harvest mites [= *Tetranychus* sp.]
802. FRENCH, G. H. Two grass insects. <Rural New Yorker, 5 February, 1881.  
Notes on *Leucania phragmitidicola* and *L. pseudargyria*.
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Description of *Isosoma* [= *Eupelmus*] *allynii*, [a parasite on *I. tritici*.]
804. FRENCH, G. H. The wheat-stalk worm. <Prairie Farmer, 28 January, 1882.  
Corrects previous description of the larva of *Isosoma* [= *Eupelmus*] *allynii*; preventives against the wheat-stalk worm.
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Describes *Isosoma* [= *Eupelmus*] *allynii* from wheat, and *I. elymi* from *Elymus canadensis*.
806. FRENCH, G. H. Entomological notes. <Prairie Farmer, 11 March, 1882.  
Considers *Isosoma allynii* a *Eupelmus* and that *I. elymi* is injurious to wheat.
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*Isosoma elymi* distinct from *I. tritici*.
810. FRENCH, G. H. Report of Prof. G. H. French. <11th Ann. Rept. State Entomologist of Illinois, 1882, pp. 65-104.  
Ravages of *Diabrotica longicornis*; means against the same; the history, food plants, ravages, and means against *Isosoma* [= *Eupelmus*] *allynii*; description of all the stages of *Heliothis armiger*; its ravages and means against it.
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*Eupelmus allynii* parasitic upon *Isosoma hordei* and *I. tritici*.
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Ravages and means against *Cecidomyia destructor*.

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\*Townend Glover was born at Rio de Janeiro, 20th of February, 1813, and died in Baltimore, Md., 7th of September, 1883. <See Bull. No. 18, U. S. Dept. Agric., Div. Ent., 1888.

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893. GLOVER, T. Entomological exhibition in Paris. <Rept. [U. S.] Comm. Agric. for 1865, 1866, pp. 88-102.  
Habits of injurious insects of Europe compared with those of America; habits of European beneficial insects; means against insects; note on silk culture.
894. [GLOVER, T.] Insects injurious to cotton plants. No. 6. The red-bug, or cotton-stainer. *Dysdercus suturellus*. H. Schf. <Monthly Rept. [U. S.] Dept. Agric. for [January], 1867, pp. 21-23. S.-b. No. 2, p. 59.  
Description, habits, ravages, and means against *Dysdercus suturellus*.
895. GLOVER, T. Report of the entomologist. <Rept. [U. S.] Comm. Agric. for 1866, 1867, pp. 27-45.  
Notes on the habits, ravages, and means against *Doryphora 10-lineata*, *Caloptenus femur-rubrum*, *C. spretus*, and *Cicada* [= *Tibicen*] *septendecim*; synopsis of correspondence showing damage done by various insects in different parts of the country; insects and their uses.
896. GLOVER, T. Entomological. Extracts from correspondence. <Monthly Rept. [U. S.] Dept. Agric. for [October], 1867, pp. 329-330.  
Food-habits of *Anisota* [= *Dryocampa*] *senatoria*, *Heliothis armiger*, and *Egeria* [= *Sciapteron*] *polistiformis*.
897. GLOVER, T. The potato beetle. <Monthly Rept. [U. S.] Dept. Agric. for [January], 1868, p. 32.  
Sawdust and coal oil as a remedy against species of Meloidæ; salt for the same.
898. GLOVER, T. Report of the entomologist. <Rept. [U. S.] Comm. Agric. for 1867, 1868, pp. 58-76, figs.  
The following species are discussed chiefly from an economic standpoint: *Anomis* [= *Aletia*] *xylina*, *Orchelimum* [= *Xiphidium*] sp., *Galeruca calmaricensis* [= *xanthomelæna*], *Doryphora 10-lineata*, *D. juncta*, *Caloptenus spretus*, *C. femur-rubrum*, *Cicada* [= *Tibicen*] *septendecim*, *Stizus* [= *Sphecius*] *speciosus*, *Æbalus typhæus*, *Strachia* [= *Murgantia*] *histrionica*, *Capsus linearis*, *Bostrichus aspericollis* [= *bicornis*], *Colaspis strigosa* [= *brunnea*], *Heliomanes* [= *Molorchus*] *bimaculatus*, *Oncideres cingulatus*, *Fidia murina*, *Melitæa phæton*, *Utetheisa bella*, *Egeria* [= *Sciapteron*] *polistiformis*, *Cæliodes* [= *Crapponius*] *inæqualis*, *Dactylosphæra vitifoliæ* [= *Phylloxera vastatrix*], *Trypeta pomonella*, *Phycitanebulo* [= *Acrobasis indiginella* var], *Anthonomus prunicida* [= *Coccotorus scutellaris*], *A. quadrigibbus*, *Semasia* [= *Grapholitha*] *prunivora*, *Anthomyia ceparum*, *A. brassicæ*, *A. raphani*, *Emphytus* [= *Harpiphorus*] *maculatus*, *Lophyrus abbotii*, *L. lecontei*, *Aspidiotus conchiformis* [= *Mytilaspis pomorum*], *Asopia costalis*, *Scolytus caryæ* [= *4-spinosus*], and *Gortyna nitela*; notes on silk raising and silk-insects.
899. GLOVER, T. The food and habits of beetles. <Rept. [U. S.] Comm. Agric. for 1868, 1869, pp. 78-117, 189 figs.  
Notes on the food and habits of the more common species of Coleoptera; outline figures of many species are given; list of some of the principal animal and vegetable substances frequented or injured by beetles, with the names of the beetles frequenting them.

900. GLOVER, T. Report of the entomologist. <Rept. [U. S.] Comm. Agric. for 1869, 1870, pp. 60-64.  
Devoted chiefly to an account of work done in the museum, with a few brief notes on silk culture and apiculture.
901. GLOVER, T. Entomological record. <Monthly Rept. [U. S.] Dept. Agric. for [August-September], 1871, pp. 332-336.  
Notes on *Doryphora 10-lineata*, *Blissus leucopterus*, Calopteni, Thrips on onions; means against *Vespa* sp. and *Scolytus* sp.
902. GLOVER, T. Entomological record. <Monthly Rept. [U. S.] Dept. Agric. for [October], 1871, pp. 403-405, 3 figs.  
Ravages and means against *Erythroneura* [= *Typhlocyba*] *vitis*; enemies.
903. GLOVER, T. Entomological record. <Monthly Rept. [U. S.] Dept. Agric. for [November and December], 1871, pp. 477-480. figs. 1-4.  
Habits and injuries of *Oncideres cingulatus* and *Elaphidion villosum*; figures adults of both species and larva of the latter; injuries of *Anthonomus signatus* to strawberry plants; describes and figures the species; new insects from the West; figures *Arctia williamsii*.
904. GLOVER, T. Report of the entomologist and curator of the museum. <Rept. [U. S.] Comm. Agric. for 1870, 1871, pp. 65-91, 60 figs.  
The following species are treated chiefly from an economic point of view: *Tetracha virginica*, *Aleochara anthomyia* [= *nitida*], *Trogosita* [= *Tenebroides*] *dubia*, *T.* [= *T.*] *mauritanica*, *Silvanus surinamensis*, *Sitodrepa panicea*, *Platycerus quercus*, *Chrysobothris femorata*, *Dicerca divaricata*, *Oberca tripunctata*, *Agrilus ruficollis*, *A. egenus*, *Agriotes mancus*, *Epicanta corvina*, *Scolytus caryæ* [= *4-spinosus*], *Sphenophorus cariosus*, *S. zeæ* [= *sculptilis*], *Phytobius* sp.?, *Conotrachelus nenuphar*, *Cæliodes* [= *Craponius*] *inaequalis*, *Balaninus nasicus*, *B. rectus*, *Anthonomus quadrigibbus*, *A. suturalis*, *A. prunicida* [= *Coccotorus scutellaris*], *Lixus concavus*, *Epicærus* [= *Graphorhinus*] *vadosus*, *E. imbricatus*, *Caryoborus arthriticus*, *Bruchus pisi*, *B. granarius*, *B. varicornis* [= *fabæ*] *B. sinuatus*, *B. obsoletus*, *Prionus imbricornis*, *P. brevicornis* [= *laticollis*], *P. laticollis*, *Egeria* [= *Sciapteron*] *polistiformis*, *Clytus pictus* [= *Cyllene robinæ*], *Heliomanes* [= *Molorchus*] *bimaculatus*, *Tessaropa* [= *Dysphaga*] *tenuipes*, *Liopus xanthoxyli* [= *fascicularis*], *Galeruca californiensis* [= *xanthomelæna*], *Diabrotica vittata*, *Graptodera* [= *Haltica*] *chalybea*, *Doryphora 10-lineata*, *D. juncta*, *Caloptenus spretus*, *C. femur-rubrum*, *Ectobia germanica*, *Nematus ventricosus* [= *ribesii*], *Pristiphora grossulariæ*, *Selaudria* [= *Eriocampa*] *cerasi*, *Enmenes fraterna*, *Pieris rapæ*, *P. oleracea*, *P. protodice*, *Macrosila* [= *Protoparce*] *celeus*, *Sphinx eremitus*, *Utetheisa bella*, *Acoliothis falsarius*, *A.* [= *Harrisina*] *americana*, *Attacus cynthia*, *A. pernyi*, *A. yama-mai*, *Bombyx* [= *Sericaria*] *mori*, *Anisota* [= *Dryocampa*] *senatoria*, *A.* [= *D.*] *rubicunda*, *Clisiocampa americana*, *Leucania unipuncta*, *Heliothis armiger*, *Phakellura* [= *Eudiotis*] *nitidalis*, *Asopia costalis*, *Anisopteryx* [= *Paleacrita*] *vernata*, *Anchylopera* [= *Rhopobota*] *vacciniana*, *Lobesia* [= *Eudemis*] *botrana*, *Carpocapsa pomonella*, *Pemphigus pyri* [= *Schizoneura lanigera*] *Phylloxera vastatrix*, *Aspidiotus conchiformis*, [= *Mytilaspis pomorum*], *Micropus* [= *Blissus*] *leucopterus*, *Coreus* [= *Anasa*] *tristis*, and *Strachia* [= *Murgantia*] *histrionica*; many of the species are figured; notes on insectivorous birds.

905. GLOVER, T. Entomological record. <Monthly Rept. [U. S.] Dept. Agric. for [January], 1872, pp. 22-24, figs. 1-3.  
Ravages of *Ædipoda* [= *Camnula*] *atrox*; figure *C. atrox*, *Caloptenus spretus*, *C. femur-rubrum*; means against *Diabrotica vittata*; *Epicauta marginata* [= *cinerea*] injurious to eggplants.
906. GLOVER, T. The Utah cricket. <Monthly Rept. [U. S.] Dept. Agric. for [February], 1872, pp. 74-76, fig. 4.  
Characters of *Anabrus simplex*; figures ♀; habits, ravages, and means against the species.
907. GLOVER, T. Entomological record. <Monthly Rept. [U. S.] Dept. Agric. for [March and April], 1872, p. 137, fig. 5.  
Characters and figures of *Cerostoma brassicella* [= *Plutella cruciferarum*]; its ravages and means against it; enemies and parasites.
908. GLOVER, T. A new grasshopper. <Monthly Rept. [U. S.] Dept. Agric. for [May and June], 1872, pp. 215-218, fig.  
Injuries of *Copiophora mucronata* and *Doryphora 10-lineata*; *Pieris rapæ* in D. C. in June, 1872.
909. GLOVER, T. Entomological record. <Monthly Rept. [U. S.] Dept. Agric. for [July], 1872, pp. 304-307, fig. 10.  
The characters, habits, ravages, and remedies of *Anarsia pruinella* [= *lineatella*]; mites on pear leaves; notes on *Doryphora 10-lineata*, ent worms, Cicadæ, aphides, various larvæ, *Caloptenus* sp., army-worms, chinch-bugs, etc.
910. GLOVER, T. Entomological record. <Monthly Rept. [U. S.] Dept. Agric. for [August and September], 1872, pp. 366-369.  
Injuries of *Aræocerus coffeæ* [= *fasciculatus*] in decaying peaches; figures larva and adult; figures larva, pupa, and adult of *Mycetobia* [= *Mycetophila*] *persicæ*; habits of the species; brief notes on insect injuries reported from various localities.
911. [GLOVER, T.] Twig girdlers. <Cultivator and Country Gentl., 5 September, 1872, v. 37, p. 567.  
Characters and habits of *Elaphidion villosum*.
912. GLOVER, T. Entomological record. <Monthly Rept. [U. S.] Dept. Agric. for [October], 1872, pp. 438-440.  
Habits, characters, and figures of *Sciara* sp.; notes on the losses caused by various insects.
913. GLOVER, T. Entomological record. <Monthly Rept. [U. S.] Dept. Agric. for [November and December], 1872, pp. 497-499.
914. GLOVER, T. Report of the entomologist and curator of the museum. <Rept. [U. S.] Comm. Agric. for 1871, 1872, pp. 69-88, 23 figs.  
Estimates of damage done by insects; habits, characters, ravages, and means against *Oncideres cingulata*, *Elaphidion villosum*, *Anthonomus signatus* and *Doryphora 10-lineata*; figures the same; means against *Conotrachelus nemophar*; characters and ravages of *Ædipoda* [= *Camnula*] *atrox*; figures *O. [= C.] atrox*, *Caloptenus spretus*, *C. femur-rubrum*; describes and figures *Anabrus simplex* and *Copiophora mucronata*; their characters, habits, and ravages; description and figures of *Plutella xylostella* [= *cruciferarum*];\*

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\* See Gardener's Monthly, August, 1872, v. 14, n. s., v. 5, pp. 250-251.

## 914. GLOVER, T.—Continued.

its habits, ravages, and means against them; means against *Anomis* [= *Aletia*] *xylina*; habits and means against *Strachia* [= *Murgantia*] *histriónica* (figure); characters, habits, ravages, and means against *Erythro-neura* [= *Typhlocyba*] *vitis* (figure); food habits, description, and figures of *Thrips* sp. on grape; figures *Phylloxera vastatrix*; its habits, ravages, and remedies; brief notes relating to *Doryphora juncta* (figure), *Lema trilineata* (figure), *Epicauta vittata* (figure), *E. lemniscata*, *E. marginata* [= *cinerea*] (figure), *Diabrotica vittata* (figure), *Udeopsylla robusta*, *Pieris rapæ* (figure), *Priocyda* [= *Eudropia*] *armataria*, *Heliothis armiger*, *Leucania unipuncta*, and *Ryparochromus* [= *Blissus*] *leucopterus*, figure.

## 915. GLOVER, T. Illustrations of North American Entomology [United States and Canada]. Orthoptera. &lt;Washington, D. C., 1872, 5 + 10 pp., 13 plates, with a page of explanatory text to each plate.

CONTENTS: Introduction, iii; arrangement of families, v; plates, notes on food and habits of Orthoptera, 1; parasites, 2; list of substances injured by Orthoptera, 5; list of genera figured, 7; list of species figured, 9; list of desiderata and errata, 11.

## 916. GLOVER, T. A vindication of the entomological division of the U. S. Department of Agriculture. &lt;1872, 6 pp.

A reply to statements made in "The Department of Agriculture, its history and objects."

## 917. GLOVER, T. Entomological record. &lt;Monthly Rept. [U.S.] Dept. Agric. for [January], 1873, pp. 29–31.

Characters, habits, and means against *Amphicerus bicaudatus*; notes on snake worm [= *Sciara* sp.]; unleached oak ashes as a means against *Macroductylus subspinosus*; insects injurious to plums.

## 918. GLOVER, T. Entomological record. &lt;Monthly Rept. [U. S.] Dept. Agric. for [April], 1873, pp. 164–166, figs. 3–6.

Natural history with figures of *Macrosila* [= *Protoparce*] *carolina*; its ravages, habits, remedies, and enemies.

## 919. GLOVER, T. Entomological record. &lt;Monthly Rept. [U. S.] Dept. Agric. for [May and June], 1873, pp. 237–238.

Notes on *Oncideres cingulata*, *Doryphora 10-lineata*, and *Amphicerus bicaudatus*; notes on the losses caused by insects.

## 920. GLOVER, T. Entomological record. &lt;Monthly Rept. [U. S.] Dept. Agric. for [July], 1873, pp. 345–351, figs. 1–3.

Notes on *Systema blanda*, *Doryphora 10-lineata*, *Phylloxera vastatrix*, trap-door spider and a luminous larva; mention of the losses caused by various insects.

## 921. GLOVER, T. Entomological record. &lt;Monthly Rept. [U. S.] Dept. Agric. for [August and September], 1873, pp. 426–431.

Notes on *Doryphora 10-lineata*, Paris green, *Phylloxera vastatrix* and on the losses caused by various insects.

## 922. GLOVER, T. Entomological record. &lt;Monthly Rept. [U. S.] Dept. Agric. for [October], 1873, pp. 496–497.

Injuries of *Ægeria* [= *Sciapteron*] *polistiformis*; remedy; notes on the losses caused by various insects.

923. GLOVER, T. Entomological record. <Monthly Rept. [U. S.] Dept. Agric. for [November and December], 1873, pp. 571-579, fig.

Means against cotton insects; notes on *Phylloxera vastatrix* *Doryphora 10-lineata*, *Xyloryctes satyrus*, and on the losses caused by insects.

924. GLOVER, T. Report of the entomologist and curator of the museum. <Rept. [U. S.] Comm. Agric. for 1872, 1873, pp. 112-138, 26 figs.

Ravages and means against *Anarsia pruinella* [= *lineatella*] (figure), *Typhlodromus pyri* (figure), *Romalea microptera* [= *Dictyophorus reticulatus*] (figures), *Amphicerus bicaudatus* (figure); food-habits of *Aræocerus coffeæ* [= *fasciculatus*] (figure), *Mycetophila persicæ* (figure), *Sciara* sp. (figure); distribution, enemies, and means against *Doryphora 10-lineata*; appearance and ravages of *Cicada* [= *Tibicen*] *septendecim*; means against *Macroductylus subspinosus* and insects injurious to plum trees; ravages of *Anomis* [= *Aletia*] *xylina*, *Heliothis armiger*, *Prodenia autumnalis* [= *Laphygma frugiperda*], cantharides [Meloidæ], *Micropus* [= *Blissus*] *leucopterus*, *Cecidomyia destructor*, *Caloptenus spretus*, *C. femur-rubrum*, cut-worms [Agrotidæ], *Lachnosterna* sp., *Leucania unipuncta*, *Bruchus pisi*, *Macrosila* [= *Protoparce*] *carolina*, *Phorodon humuli*, cabbage worms, canker-worms, *Paleacrita vernata* and *Anisopteryx pometaria*; habits of Diptera; habits and means against mosquitoes, Culicidæ, (figure), *Cecidomyia destructor* (figure), *Diplosis destructor* [= *tritici*], figure, *Cecidomyia grossulariæ*, *C.* [= *Diplosis*] *robinia*, *Tipula oleracea*, figure, *T. maculosa*, *Trichocera hiemalis*, (figure), *Simulium* sp., *Tabanus atratus* (figure), *Chrysops* sp., (figure), *Æstrus ovis*, (figure), *O.* [= *Hypoderma*] *bovis*, (figure), *Gastrophilus equi*, *Musca* sp., *Stomoxys calcitrans* (figure), *Sarcophaga carnaria*, *Calliphora vomitoria*, (figure), *Lucilia cæsar*, (figure), *Anthomyia ceparum*, (figure), *Psila rosæ* (figure), *Ortalis* [= *Tritoxa*] *flexa*, (figure), *Chlorops* sp., *Agromyza tritici*, *Hippobosca equina* (figure), *Melophagus ovinus* (figure), Pulicidæ, and *Sarcopsylla penetrans*; means against noxious insects.

925. GLOVER, T. Entomological record. <Monthly Rept. [U. S.] Dept. Agric. for [January], 1874, pp. 43-46.

Notes on *Phylloxera vastatrix*, Paris green, *Anomis* [= *Aletia*] *xylina*, and of the losses caused by insects.

926. GLOVER, T. Entomological record. <Monthly Rept. [U. S.] Dept. Agric. for [April and May], 1874, pp. 221-222.

927. GLOVER, T. Entomological record. <Monthly Rept. [U. S.] Dept. Agric. for [July], 1874, pp. 324-330.

928. GLOVER, T. Entomological record. <Monthly Rept. [U. S.] Dept. Agric. for [August and September], 1874, pp. 373-376.

929. GLOVER, T. Entomological record. <Monthly Rept. [U. S.] Dept. Agric. for [October], 1874, pp. 428-431.

930. GLOVER, T. The grape-root gall-louse. <Monthly Rept. [U. S.] Dept. Agric. for [November and December], 1874, pp. 506-507.

931. GLOVER, T. Report of the entomologist and curator of the museum. <Rept. [U. S.] Comm. Agric. for 1873, 1874, pp. 152-169, 10 figs.

Food habits and means against *Systema blanda* (figure), and *Xyloryctes satyrus* (figure); describes larva of *X. satyrus*; habits of *Oncideres cingulatus*; dis-

## 931. GLOVER, T.—Continued.

tribution and means against *Doryphora 10-lineata*; comparative account of the habits and luminosity of *Pyrophorus physoderus* (figure), *P. noctilucus* (figure), and *Photinus pyralis*; ravages of *Caloptenus* sp.; *Phytolacca decandra* as a means against roaches [Blattidæ]; habits, transformations, parasites, enemies, and means against *Macrosila* [= *Protoparce*] *carolina*, (figures); comparison between it and *M. 5-maculata* [= *P. celeus*], (figure); ravages of *Egeria* [= *Sciapteron*] *polistiformis*; means against *Phylloxera vastatrix*; notes on a luminous larva [= *Phengodes* sp.]; comparative characters of *Anomis* [= *Aletia*] *xylina* and *Heliothis armiger*; Paris green as a remedy against *A. xylina*.

## 932. GLOVER, T. Manuscript notes from my journal or illustrations of insects native and foreign. Diptera or two-winged flies. &lt;Washington, D. C., 1874, 4to, 3 + 120 pp., 13 plates.

CONTENTS: Introduction, i-iii; figures of about 340 imagoes, 160 young, 30 habitations, and numerous details of about 400 species, Pl. i-xii; anatomical details of 86 genera, Pl. A; arrangement of families, 1; alphabetical list of the families, and genera mentioned in this work, with synonyms, habitat, food, etc., 2-59; alphabetical list of predaceous or parasitic Diptera, the larvæ or perfect flies of which destroy other insects, 60-62; alphabetical list of vegetable and animal substances, etc., inhabited, injured, or destroyed by Diptera, 63-78; alphabetical list of insects of other orders either destroying Diptera or destroyed by them, 79-85; alphabetical list of authors, and of authorities quoted, 86-89; abbreviations, 90; alphabetical list of some of the genera, etc., of Diptera, with derivation of names, 91-93; alphabetical list of Diptera, and other orders, fungi, etc., with derivations of names, 94-100; supplement, remedies, 101-111; alphabetical lists of insects, etc., mentioned in report on remedies, 112; synoptic tables of divisions and families, 113-118; definition of terms, 118; addenda, 119-120; notes, 120.

## 933. GLOVER, T. Recent notes on the Phylloxera from foreign sources. &lt;Monthly Rept. U. S. Dept. Agric. for [January], 1875, p. 40. Reprint: &lt;Can. Ent., February, 1875, v. 7, pp. 35-39.

Results of experiments against *Phylloxera vastatrix*.

## 934. GLOVER, T. On beneficial insects. &lt;Monthly Rept. U. S. Dept. Agric. for [April], 1875, pp. 175-176, fig.

Characters and figures of *Prionotus* [= *Prionidus*] *cristatus*; habits.

## 935. GLOVER, T. Entomological record. &lt;Monthly Rept. U. S. Dept. Agric. for [May and June], 1875, pp. 221-230, figs. 1-6.

Treats of cut-worms; their habits, characters, enemies, and remedies; notes on *Phylloxera vastatrix* and on the losses caused by various insects.

## 936. GLOVER, T. Entomological record. &lt;Monthly Rept. U. S. Dept. Agric. for [July], 1875, pp. 307-310.

Notes on the losses caused by various insects.

## 937. GLOVER, T. Insect injuries. &lt;Monthly Rept. U. S. Dept. Agric. for [August and September], 1875, pp. 367-370.

Notes on the losses caused by various insects.

## 938. GLOVER, T. Entomological record. &lt;Monthly Rept. U. S. Dept. Agric. for [October], 1875, pp. 442-445.

Natural history, habits, and ravages of *Micropus* [= *Blissus leucopterus*] its enemies and parasites; means against it and against *Doryphora 10-lineata*.

939. GLOVER, T. Report of the entomologist and curator of the museum. <Rept. [U. S.] Comm. Agric. for 1874, 1875, pp. 122-146, 20 figs.

Notes on the injuries of insects during the past year referring especially to the ravages of *Doryphora 10-lineata*, *Caloptenus spretus*, *Micropus* [= *Blissus*] *leucopterus*, and *Aletia xyliana*. General account with figures of characteristic species of Orthoptera, Thripidae, Thysanura, and Mallophaga.

940. GLOVER, T. Insect injuries. <Monthly Rept. [U. S.] Dept. Agric. for [July], 1876, pp. 245-246.

Notes on the losses caused by various insects.

941. GLOVER, T. Insect injuries. <Monthly Rept. [U. S.] Dept. Agric. for [August and September], 1876, pp. 333-336.

Notes on the losses caused by various insects.

942. GLOVER, T. Manuscript notes from my journal, or illustrations of insects, native and foreign. Order Hemiptera, suborder Heteroptera, or plant bugs. <Washington, D. C., 1876, 4to, 2+2+10+133 pp., 10 plates.

CONTENTS: Introduction, 1-2; about 325 figures of about 257 imagoes, 19 young and numerous anatomical details of about 240 species; arrangement of families, Burmeister's (1835), 16; Westwood's (1840), 16; Amyot and Serville's (1843), 16; Douglas and Scott's (1861-1865), 17; alphabetical list of families and genera, with synonyms, habits, food, habitat, 18-73; alphabetical list of predaceous or parasitic species, the larvæ, pupæ, or imagoes of which destroy other insects, 74-75; alphabetical list of vegetable and animal substances frequented, injured, or destroyed by Heteroptera, 76-85; alphabetical list of insects of other orders, destroyed by or destroying Heteroptera, 86-87; alphabetical list of authors, authorities, societies, etc., referred to, 88-91; abbreviations, 92; remedies, 93-96; alphabetical list of sections, families, and genera, 97-112; alphabetical list of species, 112-118; genera as arranged in the museum of the U. S. Department of Agriculture, 119-123; extract from Uhler's List of Hemiptera west of the Mississippi, 124-127; notes on habits, changes in nomenclature, position, and classification of the families, subfamilies, genera, and species, 128-131; errata and addenda, 132; recipients of this work, 132.

943. GLOVER, T. Report of the entomologist. <Rept. [U. S.] Comm. Agric. for 1875, 1876, pp. 114-140, 63 figs.

Characters of the Hemiptera Heteroptera; describes and figures some of the more prominent species of the suborder; their habits, ravages, and remedies.

944. GLOVER, T. Report of the entomologist and curator of the museum. <Rept. [U. S.] Comm. Agric. for 1876, 1877, pp. 17-46, 59 figs.

Report of Charles R. Dodge on the agricultural exhibit at the International Exhibition in Philadelphia; characters of the Hemiptera Homoptera; describes and figures some of the more important species of the group; their habits, ravages, and means against them.

945. GLOVER, T. Manuscript notes from my journal or entomological index, to names, etc., in agricultural reports, with list of vegetable and animal substances injured or destroyed by

## 945. GLOVER, T.—Continued.

insects, etc. <Washington, D. C., 1877, 4to, pp. 79 *bis* + pp. 81–103.

CONTENTS: Entomological index to the agricultural reports, 1–77; insects to a greater or less degree beneficial by destroying noxious insects, 78–79 *bis*; other agencies useful in the destruction of insects, 79 *bis*; substances injured or destroyed by insects, articles on cotton and cotton insects, 81–101; addenda and errata, 102–103.

## 946. GLOVER, T. Report of the entomologist and curator of the museum. &lt;Rept. [U. S.] Comm. Agric. for 1877, 1878, pp. 89–148, 7 plates.

Descriptions and figures of some of the more important species of Hymenoptera; their characters, habits, injuries, and means against them; report of the museum division.

## 947. GLOVER, T. Manuscript notes from my journal.—Cotton, and the principal insects, etc., frequenting or injuring the plant in the United States. &lt;Washington, D. C., 1878, 2 pp., 22 plates.

CONTENTS: Introductory; articles relating to cotton in the reports of the U. S. Department of Agriculture, 1–2; seeds and young plants, pl. 1; rot and disease commonly known as sores, pl. 2; rust of the leaf, as caused by fungus or by *Acarus* sp., pl. 3; rust more developed, pl. 4; blight, pl. 5; Aphis, pl. 6; Plusia, 2 sp., Boarmia, pl. 7; Hyperchiria, pl. 8; Lozotænia [= *Cacæcia*] *rosaceana*, *Laphygma macra* [= *frugiperda*] pl. 9; *Aletia argillacea* [= *xylina*], pl. 10; *Lozotænia gossypiana* [*Cacæcia rosaceana*], *Antho-*  
*coris* [= *Triphleps*] *insidiosus*, *Centrinus perscitus*, *Calocoris rapidus*, *C. bipunctatus*, pl. 11; young flower bud, young boll, bud in its involucre, pl. 12; flower open first day: *Epicauta strigosa*, *E. vittata*, *E. ferruginea*, *Chauliognathus americanus*, *C. marginatus*, pl. 13; young involucres shed in consequence of non-impregnation caused by wet weather, pl. 14; flower and young boll on second and third day: *Euryomia* [= *Euphoria*] *melancholica*, *E. sepulchralis*, *Trigonopeltastes* [= *Trichius*] *delta*, *Podisus spinosus*, *Conotelus obscurus*, pl. 15; young bolls: *Leptoglossus phyllopus*, *Euschistus punctipes* [= *variolarius*], *Nezara pennsylvanica*, *Largus succinctus*, pl. 16; flower: *Heliothis armiger*, pl. 17; boll: *H. armiger*, pl. 18; *Dysdercus suturellus*, pl. 19; rotted bolls: *Colastus semitectus*, *Homalota* sp., *Carpophilus hemipterus*, *Silvanus quadricollis*, attacking maize, fungoid growth on maize, pl. 20; rusted bolls: *Tinea granella* ? in maize also, pl. 21; healthy boll and partially rusted boll, pl. 22.

## 948. GODFREY, A. N. Report. &lt;First Rept. U. S. Ent. Comm., 29 July, 1878, pp. [88]–[90].

See part 3, No. 1643, p. 228.

## — GODFREY, A. N. See No. 963.

949. GODING, F. W. "The army worm," *Leucania unipuncta* Haw. <Blackberry [Ill.] Blade, 28 July, 1881, v. 2, p. 1.

Ravages and means against *Leucania unipuncta*.

950. GODING, F. W. The 10-lined potato beetle, *Doryphora decemlineata* Say. <Blackberry [Ill.] Blade, 8 September, 1881, v. 2, p. 1.

History, life-history, times of appearance, ravages, and parasites, and means against *Doryphora 10-lineata*.

951. GODING, F. W. Insects injurious to vegetation in Iowa. <Rept. Iowa State Agric. Soc. for 1882, 1883, pp. 322-329. Reprint: <Ancona, Ill., Advocate Publ. Co., 1883, 11 pp.  
General account of *Anisopteryx* [= *Paleacrita*] *vernata*, *Clisiocampa americana*, *Selandria* [= *Monophadnus*] *rubi*, *Phyllophaga* [= *Lachnosterna*] *fusca*, *Leucania unipuncta*, *Blissus leucopterus*, *Doryphora 10-lineata*, *Pionea rimosalis*, and *Pieris rapæ*; means against them.
952. GODING, F. W. Human parasites. <Chicago Medical Journal and Examiner, December, 1883.
953. GODING, F. W. Notes from Livingston and adjacent counties. <Trans. Dept. Agric. State of Illinois for 1885, 1886, v. 22, pp. 127-130.  
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954. GORHAM, D. B. The cotton worm, its history, character, visitations, etc, <De Bow's Commercial Review, 1847, v. 3, p. 535. <Southern Cultivator, 1847, p. 114. <De Bow's Industrial Resources, 1852, p. 158.  
Natural history of *Aletia xyliana*; account of previous visitations; the migration theory; describes *Pimpla conquisitor*? a parasite on the *Aletia*.
955. GOTT, B. Report on some of our fruit insect enemies. <Ann. Rept. Ent. Soc. Ontario for the year 1877, 1877, pp. 40-47, figs. 21-36.  
Records observations on *Clisiocampa americana*, *Ægeria tipuliformis*, *Nematus ventricosus* [= *ribesii*], *Pempelia grossulariæ* [= *Dakruma convolutella*], *Phyllophaga quercina* [= *Lachnosterna fusca*], *Agrotis* [= *Hadena*] *devastatrix*, *Doryphora 10-lineata*, *Pelidnota punctata*, *Haltica chalybea*, *Phylloxera vastatrix*, *Carpocapsa pomonella*, *Conotrachelus nenuphar*, *Pieris rapæ*, and *Arctia* [= *Pyrrharetia*] *isabella*; several of the species are figured; insect register for 1877.
956. GOTT, B. [*Lophyrus abbotii* attacking *Pinus strobus*.] <Can. Ent., May, 1878, v. 10, p. 99.  
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957. GOTT, B. Notes of the year. <Ann. Rept. Ent. Soc. Ontario for the year 1878, 1879, pp. 55-59.  
Record of observations on *Cecidomyia destructor*, *C.* [= *Diplosis*] *tritici*, *Clisiocampa americana*, *C. sylvatica* [= *disstria*], *Nematus ventricosus* [= *ribesii*], *Pempelia grossulariæ* [= *Dakruma convolutella*], *Doryphora 10-lineata*, *Conotrachelus nenuphar*, *Carpocapsa pomonella*, *Datana ministra*, *Notodonta* [= *Edemasia*] *concinna*, *Bruchus pisi*, *Pieris rapæ*, *Phyllophaga quercina* [= *Lachnosterna fusca*], *Selandria* [= *Monostegia*] *rosæ*, and *Aphis* [= *Schizoneura*] *lanigera*; insect register for 1878.
958. GOTT, B. The plum Curculio (*Conotrachelus nenuphar*). <Ann. Rept. Ent. Soc. Ontario for the year 1879, 1880, pp. 84-88, figs. 55-57.  
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*Contains*, pp. 21-25, notes on the times of appearance of young locusts; hatching of eggs; enemies, by GEORGE F. GAUMER: pp. 25-31, figs. 1-3, account of the deposition of eggs; egg-parasites; times of hatching; means against; enemies; direction of flights, by A. N. GODFREY: pp. 32-41, the name; range; habitat; means of control; migrations; avoidance of districts infested the previous year; egg-parasites; flights in 1877; final destination, by C. V. RILEY: p. 42, *Caloptenus spretus* compared with allied species by G. F. GAUMER.
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965. GREEN, R. On the Hessian fly. <Amer. Farmer, August 30, 1822. <N. Engl. Farmer, 9 November, 1822, v. 1, p. 113.  
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\* Born at Königsberg, Prussia, 30 May, 1817; died at Cambridge, Mass., 9 November, 1893.

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1004. HAGEN, H. A. Museum pests observed in the entomological collection at Cambridge. <Proc. Bost. Soc. Nat. Hist., January, 1879, v. 20, pp. 56-62. Reprint: <Journ. Applied Science, 1879, v. 10, pp. 90-91. Abstract: <Nature, 1879, v. 20, p. 106.

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1005. HAGEN, H. A. Attacks of native insects upon imported trees <Psyche, February, 1879, v. 2, pp. 210-211.

List of insects injuring *Pinus strobus* and *Robinia pseudacacia* in Germany.

1006. HAGEN, H. A. Obnoxious pests; suggestions relative to their destruction. <Boston Evening Transcript, 11 April, 1879. <Worcester Evening Gazette, April, 1879. <Can. Ent., 1879, v. 11, pp. 110-114. <Ent. Zeit. Stettin, 1879, v. 40, pp. 369-371; 1880, v. 41, p. 355. <Ann. Rept. Ent. Soc. Ontario, for the years 1879, 1880, pp. 22-24.

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Conclusions drawn from the experiments of Thomas H. Hart.
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Occurrence of larvæ and pupæ of *T. cerasi*? in fruit of black cherry.

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U. S. DEPARTMENT OF AGRICULTURE.

DIVISION OF ENTOMOLOGY.

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OF

THE MORE IMPORTANT CONTRIBUTIONS

TO

AMERICAN ECONOMIC ENTOMOLOGY.

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PREPARED BY AUTHORITY OF THE SECRETARY OF AGRICULTURE

BY

SAMUEL HENSHAW.

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PART V.

THE MORE IMPORTANT WRITINGS

OF

GOVERNMENT AND STATE ENTOMOLOGISTS,

AND OF

OTHER CONTRIBUTORS TO THE LITERATURE OF AMERICAN  
ECONOMIC ENTOMOLOGY.

L-Z.

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WASHINGTON:

GOVERNMENT PRINTING OFFICE.

1896.

FORTY-SEVENTH CONGRESS, FIRST SESSION.

CONGRESS OF THE UNITED STATES,  
IN THE HOUSE OF REPRESENTATIVES,

*June 24, 1882.*

*Resolved*, By the House of Representatives (the Senate concurring), that there be printed, for the use of the Department of Agriculture, one thousand copies of a special report entitled "Bibliography of Economic Entomology."

Attest:

EDW. MCPHERSON, *Clerk*.

Passed the Senate July 6, 1882.

F. E. SHOBER, *Acting Secretary*.

A true copy.

EDW. MCPHERSON, *Clerk*.

## LETTER OF TRANSMITTAL.

UNITED STATES DEPARTMENT OF AGRICULTURE,  
DIVISION OF ENTOMOLOGY,  
*Washington, D. C., October 15, 1896.*

SIR: In transmitting for publication the final part of the Bibliography of the More Important Contributions to American Economic Entomology, the first part of which was published in 1890, it seems necessary, in view of certain public claims by Mr. B. Pickman Mann as to the authorship of the bibliography, to make a further statement for the information of those who may be interested in the question.

It became the writer's duty in 1889 to transmit for publication Parts I, II, and III, during the prolonged absence of the chief of the division. Mr. Henshaw's name appeared on the title page of these parts, as well as subsequent parts, as the author, and to this Mr. Mann has taken exception, as well as to the statement made by the writer in his original letter of transmittal, to the effect that the manuscript which he had prepared "was turned over in an incomplete and fragmentary condition" to Mr. Henshaw, who had "added greatly to it and practically rewritten portions already prepared." Subsequent investigation has convinced the writer that in this statement he did not give Mr. Mann sufficient credit, and this omission is hereby publicly acknowledged.

Nevertheless, the claims which Mr. Mann has made can not be reconciled with statements by Mr. Henshaw as to the condition of the manuscript when received by him and the difficulty in reconciliation is indicated by the following statement from Mr. Mann and introductory note from Mr. Henshaw:

### MR. MANN'S STATEMENT.

This work was in its original conception modeled upon the bibliographical record of "Psyche," under my editorship, and I was employed in the preparation of it during my six years' connection with the Department of Agriculture. I completed more than five-eighths of the material, except the indexes, composing the first volume, mainly in Part III, and left this, at the time of the severance of my connection with the Division of Entomology, December 31, 1886, in condition for publication as prepared, together with about 5,000 titles of other articles, the latter largely without analytic notes, for the subsequent parts, and an estimated number of more than 18,000 index references to the same.

Of the titles prepared for the parts subsequent to Part III I find only the more important to have been published.

B. PICKMAN MANN.

WASHINGTON, *July 4, 1896.*

## MR. HENSHAW'S INTRODUCTORY NOTE.

The publication of the final part of this bibliography renders an acknowledgment of the assistance received desirable.

Messrs. A. J. Cook, C. H. Fernald, S. A. Forbes, L. O. Howard, H. Osborn, F. M. Webster, and C. M. Weed kindly furnished data concerning their several publications, and the printed lists of Messrs. Asa Fitch, Townend Glover, T. W. Harris, William Le Baron, and J. A. Lintner have been freely used. The work of Messrs. A. S. Packard and J. S. Kingsley in the first stages of the bibliography should also be mentioned, and I especially desire to add an explicit recognition of the work of Mr. B. P. Mann.

Though an exact agreement between Mr. Mann and myself does not seem possible, I most willingly acknowledge that his work, especially in Part III, was both extensive and important. The original plan of the bibliography, like the bibliographical record published in "*Psyche*," was conceived by Mr. Mann, and during his connection with the Division of Entomology, from September 1, 1881, to December 31, 1886, he completed several thousand titles, besides amassing a large amount of miscellaneous data. I supplemented Mr. Mann's work with additional material and rewrote, reviewed, and, when possible, condensed the analytic notes of the parts prepared by Mr. Mann; introduced a uniform nomenclature of the scientific names, made the several indexes wholly anew, and read the proof.

SAMUEL HENSHAW.

CAMBRIDGE, *October 12, 1896.*

By mutual consent of Messrs. Mann and Henshaw the evidence upon which these two notes are based has been submitted to Dr. Theodore N. Gill, as an unprejudiced arbiter of the question as to the true authorship of the volumes. Dr. Gill decided, in a letter to the Assistant Secretary of Agriculture, dated April 20, 1896, "that the credit for the work and right to appear on the title page as editor properly belong to Mr. Henshaw."

The present part completes the work which can be done under the authority of the joint resolution of Congress dated July 6, 1882. It brings the Bibliography of American Economic Entomology down to June 30, 1888.

Efforts will be made to bring the bibliography down to date and to publish thereafter occasional supplements.

Respectfully,

L. O. HOWARD,  
*Entomologist.*

Hon. J. STERLING MORTON,  
*Secretary of Agriculture.*

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<sup>1</sup>Dr. LeBaron was born at North Andover, Mass., 17 October, 1814, and died at Elgin, Ill., 14 October, 1876. See Ent. Amer., October, 1885, v. 1, pp. 122-125.

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